ORDER NO. KM40012750C1

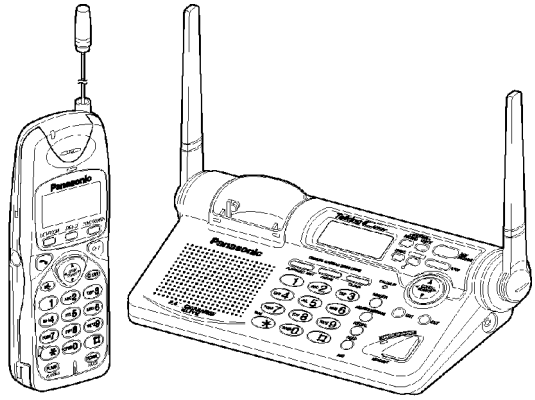
F12

Service Manual

Telephone Equipment

KX-TG2680N

2.4GHz Digital Cordless Phone
Champagne gold Version
(for U.S.A.)



(Handset) (Base Unit)

SPECIFICATIONS

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	Base Unit	Handset
Power Source:	AC Adaptor (PQWATG2650N)	Rechargeable Ni-MH battery
Receiving Frequency:	24 channels within 2.4015~2.4705 GHz	24 channels within 2.4015~2.4705 GHz
Receiving Method:	Direct conversion	Direct conversion
Transmitting Frequency:	24 channels within 2.4015~2.4705 GHz	24 channels within 2.4015~2.4705 GHz
Oscillation Method:	PLL synthesizer	PLL synthesizer
Tolerance of OSC Frequency:	24 MHz ± 720 Hz	24 MHz ± 720 Hz
Modulation Method:	NA (FSK/SS)	NA (FSK/SS)
Spread spectrum Method:	Direct sequence	Direct sequence
Chip rate	15 chip	15 chip
ID Code:	22-bit	22-bit
Dial Mode:	Tone (DTMF)/Pulse	Tone (DTMF)/Pulse
Redial:	Up to 32 digits	Up to 32 digits
Speed Dialer:		Up to 22 digits
Power Consumption:		11 days at Standby, 4.5 hours at Talk (maximum)
Dimension (H × W × D):	$2^{11}/_{32}$" × $9^{5}/_{32}$" × 6" (60 × 233 × 153 mm)	$5^{25}/_{32}$" × $1^{31}/_{32}$" × $1^{13}/_{32}$" (147 × 50 × 36 mm)
Weight	0.99 lbs. (450 g)	0.37 lbs. (170 g)

Design and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

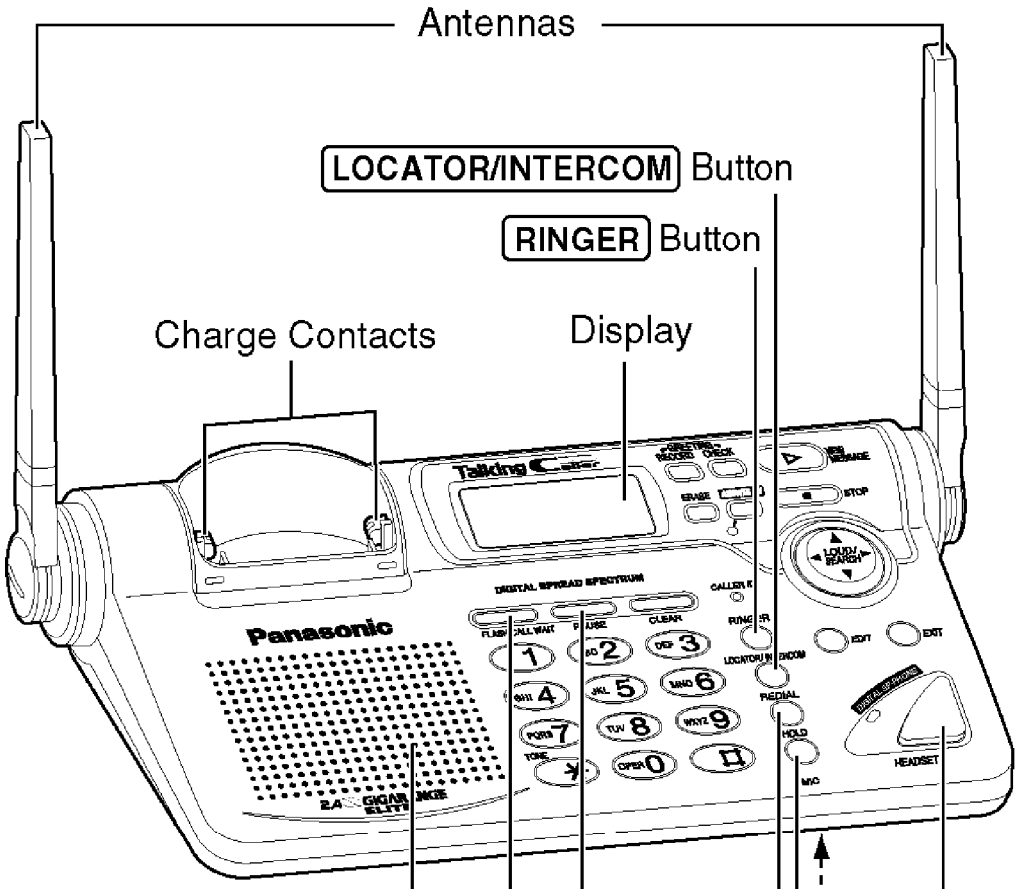
When you mention the serial number, write down all 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

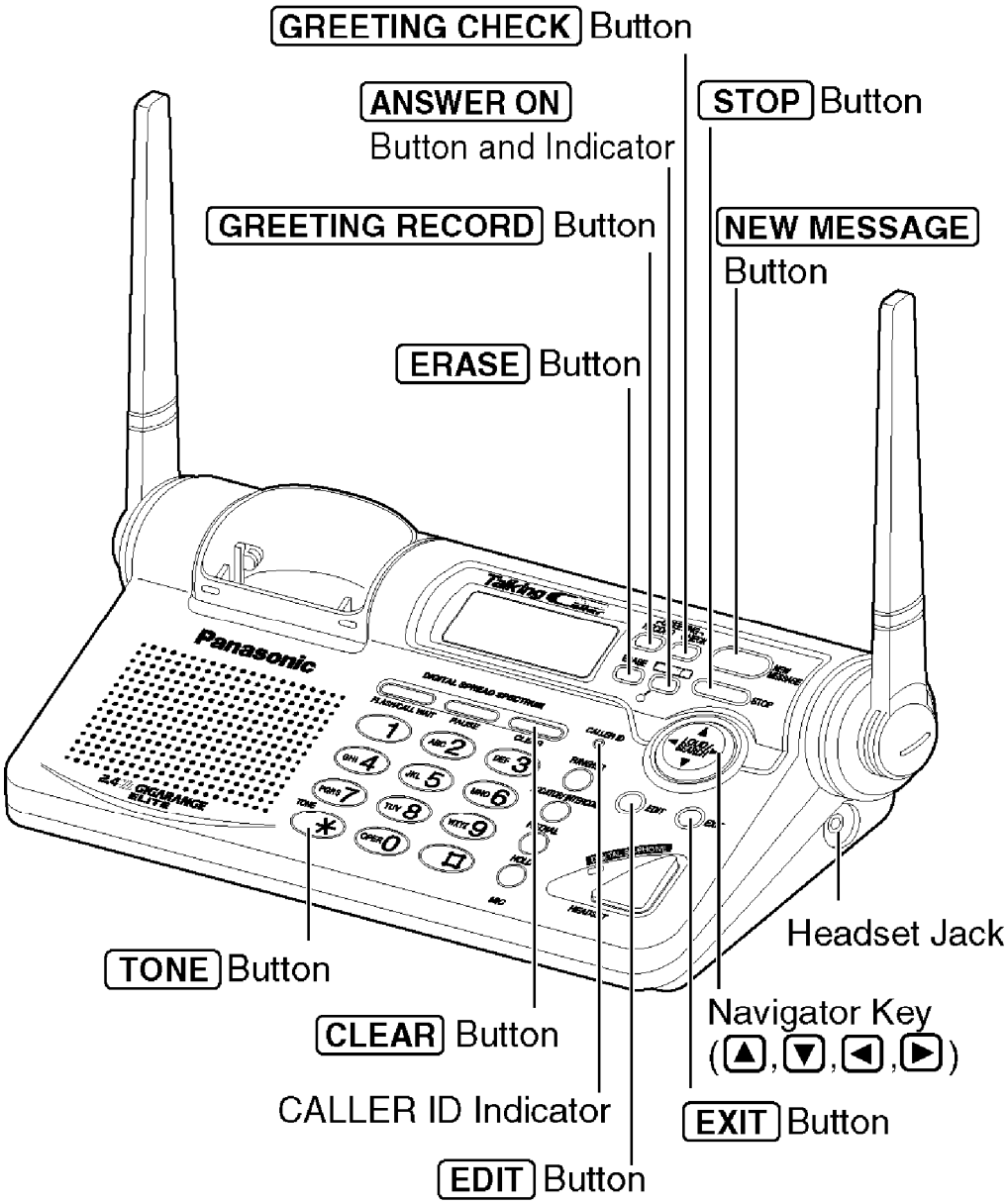
FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
When replacing, the following precautions will help prevent recurring malfunctions.
1. Cover the plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on the work table.
4. Do not grasp IC or LSI pins with bare fingers.

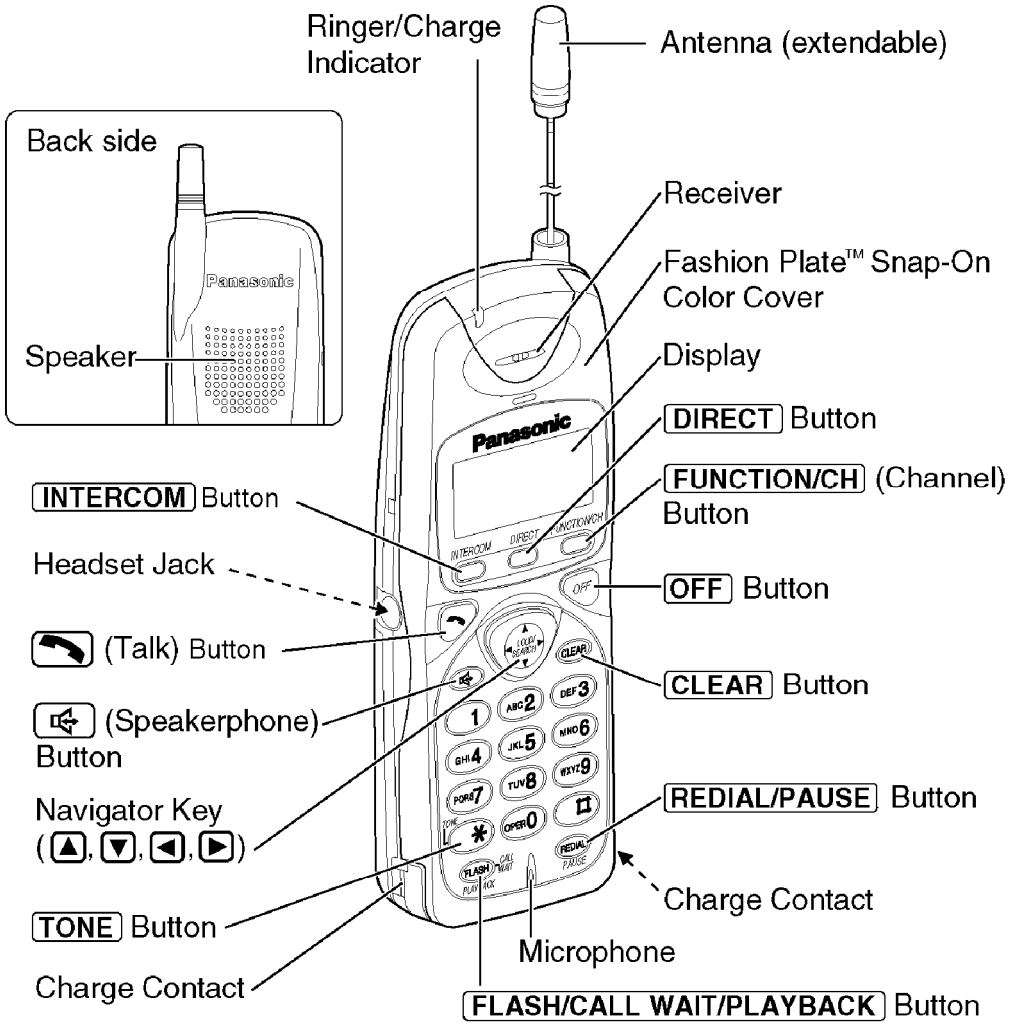
1. LOCATION OF CONTROLS

1.1. Base Unit


Antennas
LOCATOR/INTERCOM Button
RINGER Button
Charge Contacts
Display
Speaker
FLASH/CALL WAIT Button
PAUSE Button
REDIAL Button
HOLD Button
MIC (Microphone)
DIGITAL SP-PHONE (Speakerphone) /HEADSET
Button and Indicator

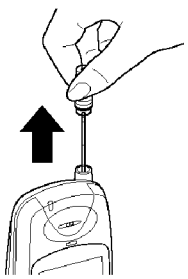

GREETING CHECK Button
ANSWER ON
Button and Indicator
STOP Button
GREETING RECORD Button
NEW MESSAGE
Button
ERASE Button
Panasonic
Headset Jack
TONE Button
CLEAR Button
Navigator Key
(▲,▼,◀,▶)
CALLER ID Indicator
EXIT Button
EDIT Button

1.2. Handset

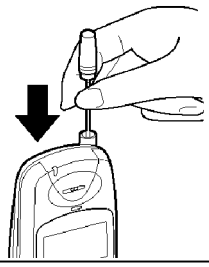


How to handle the handset antenna:

You can even use the handset without extending the antenna. But for best performance, extend the antenna fully until it locks into position.



To put away the antenna, slide down vertically holding the lower part until it stops.

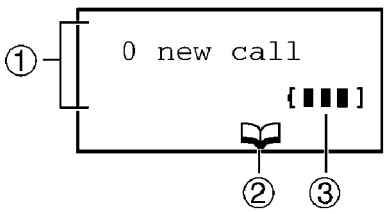


2. DISPLAYS

Both the handset and the base unit show you instructions and information on the displays. These display prompts are shown below.

2.1. Common prompts for the handset and the base unit

Handset



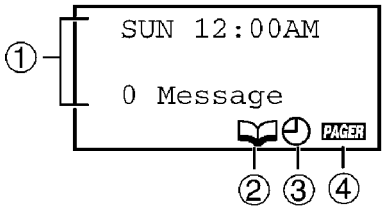
① The display shows the dialed number, call status, programming options and directory items etc. If you subscribe to a Caller ID service, caller information will be displayed. The number of new calls will also be displayed.

② The directory icon displays when storing or viewing the directory items.

③ The battery icon indicates the battery strength.

Standby mode:
While the handset is off the base unit, the display becomes blank after you finish using the handset (making/answering a call, viewing the Caller List or directory list etc.). The handset can receive calls. The battery life is conserved in this state. While the handset is on the base unit, the battery icon and the number of new Caller ID calls are displayed in the standby mode.

Base unit



① The day and time and the number of new incoming messages are displayed while the unit is not in use (Standby mode). The display shows the dialed number, call status, programming options and directory items etc.
If you subscribe to a Caller ID service, caller information will be displayed. The number of new calls will be also displayed.

② The directory icon displays when viewing the directory items.

③ The clock icon flashes with the day and time if the clock needs adjusting.

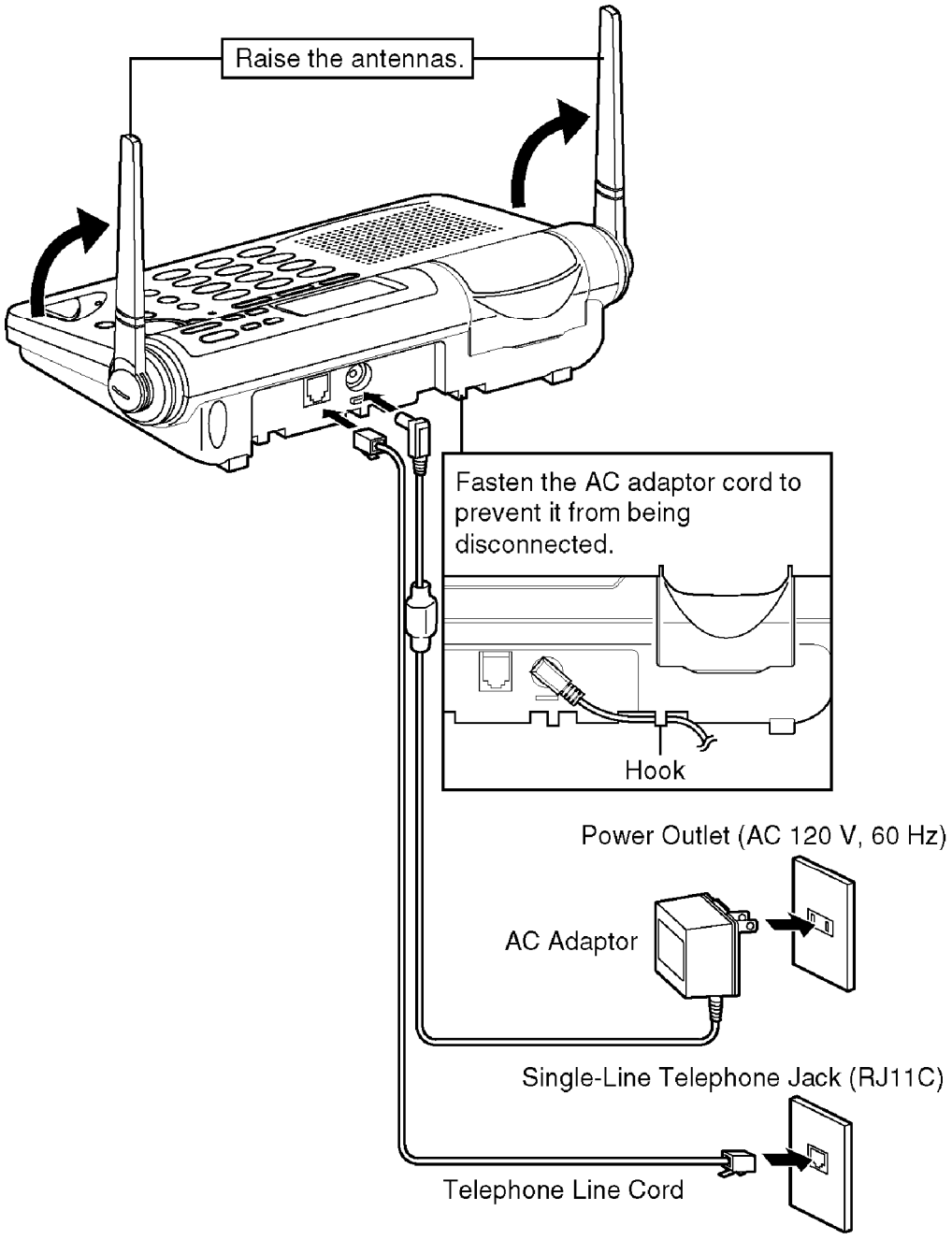
④ The pager icon indicates the pager mode is on.

Backlight LCD Displays

The handset and the base unit have the backlight LCD displays. Each display will light when you start using the handset or the base unit, and when a call is received. The handset display light will stay on for a few seconds after pressing a button or lifting the handset off the base unit. You can change the backlight color to orange for certain callers by storing them in the directory.

3. SETTINGS

3.1. Connections


Raise the antennas.
Fasten the AC adaptor cord to prevent it from being disconnected.
Hook
Power Outlet (AC 120 V, 60 Hz)
AC Adaptor
Single-Line Telephone Jack (RJ11C)
Telephone Line Cord

Note:

- **USE ONLY WITH Panasonic AC ADAPTOR PQLV10 (Order No. PQWATG2650N).**
- **The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)**
- **If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.**

3.2. Battery Charge

3.2.1. Battery strength

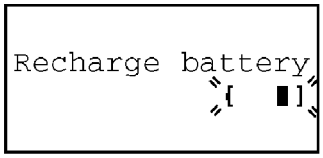
You can check the battery strength on the handset display while the handset is on the base unit, while it is in use (making/answering a call etc.), or after viewing the Caller List or directory items, programming etc. The battery strength will remain for 5 seconds after using the handset, then the display will return to the standby mode.

The battery strength is as shown in the chart below.

Display prompt	Battery strength
[▮▮▮]	High
[▮▮]	Medium
[▮]	Low
[▮] (flashing)	Needs to be recharged.

- If the battery has been fully charged, the ringer/charge indicator will light in green.

3.2.2. Recharge



Recharge the battery when:
– "Recharge battery" is displayed on the handset,
– "[▮]" flashes on the display, or
–the handset beeps intermittently while it is in use.

- If you DO NOT recharge the handset battery for more than 15 minutes, the display will keep indicating "Recharge battery" and/or "[▮]" will continue to flash.

3.2.3. Battery information

After your Panasonic battery is fully charged:

Operation		Approx. battery life
While in use (TALK)	near the base unit*	Up to 4.5 hours
	away from the base unit	Up to 3.5 hours
While not in use (Standby)		Up to 11 days

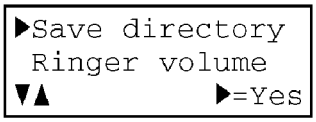
* Within about 10 feet (3 m)

- Battery life may be shortened depending on usage conditions, such as viewing the Caller ID Caller List or directory list, and ambient temperature.
- **Clean the handset and the base unit charge contacts with a soft, dry cloth. Clean if the unit is subject to grease, dust or high humidity.**
  Otherwise the battery may not charge properly.
- If the battery is fully charged, you do not have to place the handset on the base unit until "Recharge battery" is displayed and/or "[▮]" flashes. This will maximize the battery life.
- The battery cannot be overcharged.

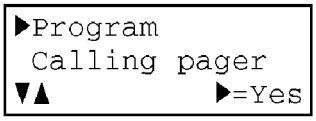
3.3. Selecting the Dialing Mode

You can program the dialing mode **using the handset near the base unit**.
If you have touch tone service, set to "Tone". If rotary or pulse service is used, set to "Pulse". Your phone comes from the factory set to "Tone".
Make sure the unit is in the standby mode initially.

1 Press [FUNCTION/CH].



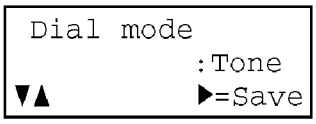
2 Press [▼] or [▲] repeatedly until the arrow points to "Program".



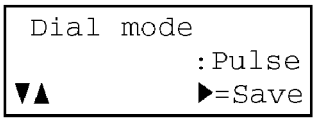
3 Press [▶] (Yes key).

4 Press [▼] or [▲] repeatedly until the arrow points to "Set dial mode".

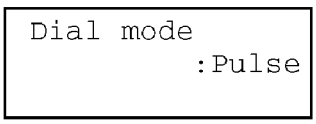
5 Press [▶] (Yes key).



6 Press [▼] or [▲] to select "Pulse" or "Tone".



7 Press [▶] (Save key).
- A beep sounds.
- To return to the standby mode, press [OFF].

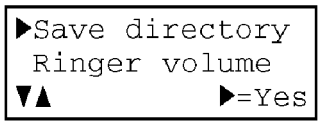


- You can exit the programming mode any time by pressing [OFF].
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

3.4. Selecting the Line Mode

If the line is connected to a low voltage system such as a PBX, set to "B". Otherwise the Call Waiting Caller ID Feature may not be used, and the unit may not alert your pager. Your phone comes from the factory set to "A". **Use the handset near the base unit.**
Make sure the unit is in the standby mode initially.

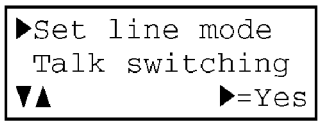
1 Press FUNCTION/CH.



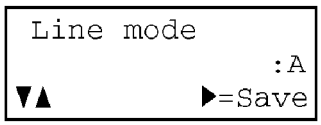
2 Press ▼ or ▲ repeatedly until the arrow points to "Program".

3 Press ▶ (Yes key).

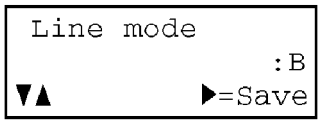
4 Press ▼ or ▲ repeatedly until the arrow points to "Set line mode".



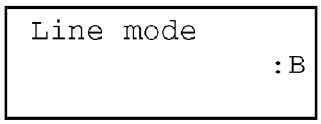
5 Press ▶ (Yes key).



6 Press ▼ or ▲ to select "B" or "A".



7 Press ▶ (Save key).
- A beep sounds.
- To return to the standby mode, press OFF.



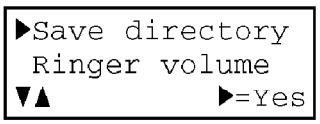
- You can exit the programming mode any time by pressing OFF.
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

4. PREPARING THE ANSWERING SYSTEM

4.1. Day and Time Adjustment

Voice Time/Day Stamp: During playback, a synthesized voice will announce the time and day that each message was recorded.

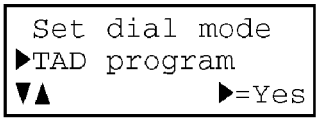
1 Press FUNCTION/CH.



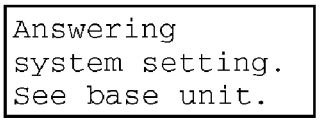
2 Press ▼ or ▲ repeatedly until the arrow points to "Program".

3 Press ▶ (Yes key).

4 Press ▼ or ▲ repeatedly until the arrow points to "TAD program".

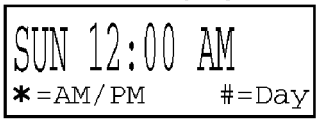


5 Press ▶ (Yes key).
- The base unit display shows programming options.



6 Press 0.
- "Set time" is announced.
  If previously adjusted, the day/time will be heard.

Base unit display



7 Enter the time (hour and minute) using a 4-digit number.
(Ex. To set 9:30, enter "0930".)

8 Press * to select "AM" or "PM".
Press # repeatedly to set the day.

9 Press ▶ (Save key).
- The unit announces the day/time. The clock starts working.
- If 6 beeps sound, the setting is not correct. Start again from step 5.
- To return to the standby mode, press OFF.

- In step 7, you cannot enter numbers greater than 12. **Do not use military time.** (To set 13:00 hours, enter "0100", and select "PM" by pressing *.)

If a power failure occurs, the adjusted time/day will be erased. Readjust the day/time.

For Caller ID service users

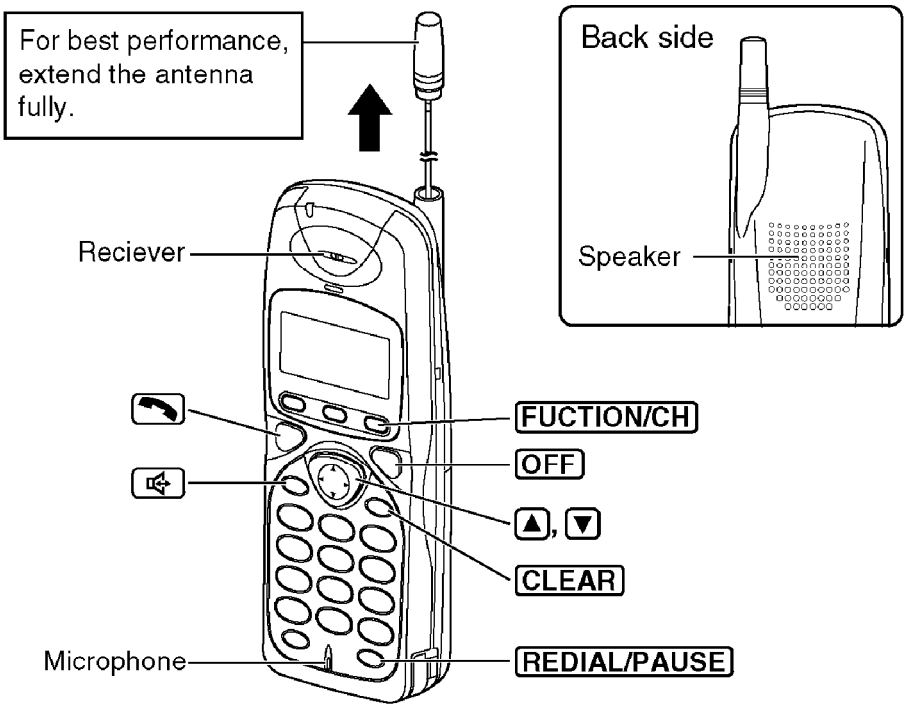
For Caller ID service users

- The Caller ID information will re-set the clock after the first ring if the adjusted time is incorrect. However, the day will not be re-set.
- If the time has not previously been set, the Caller ID information will not adjust the clock.
- The Caller ID information will automatically adjust the clock for daylight saving time.

5. OPERATION

5.1. Making Calls

5.1.1. With the Handset



1 Press .

Talk

2 Dial a phone number.

- The dialed number is displayed.
- After a few seconds, the display will show the length of the call and the battery strength.

Talk
1112222

Talk
00-00-00 [▮▮▮]

3 To hang up, press OFF or place the handset on the base unit.

off
00-01-08 [▮▮▮]

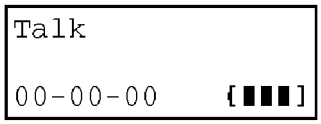
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." isdisplayed.

To have a hands-free phone conversation (Using Digital Duplex Speakerphone)

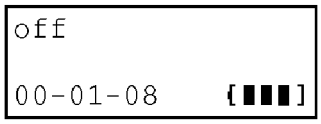
1 Press [speaker].
- The button lights.

2 Dial a phone number.
- The dialed number is displayed.
- After a few seconds, the display will show the length of the call and the battery strength.

3 When the other party answers, talk into the microphone.



4 To hang up, press [OFF] or place the handset on the base unit.
- The [speaker] button light goes out.



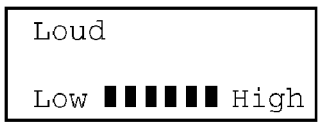
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

Hands-free Digital Duplex Speakerphone
For best performance, please note the following:
- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press [▼] to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press [▼] to decrease the speaker volume.
- While talking using [handset], you can switch to the hands-free phone conversation by pressing [speaker]. To switch back to the receiver, press [handset].

To adjust the receiver volume (High, Medium or Low) or speaker volume (6 levels) while talking

To increase, press [▲].
To decrease press [▼].
- Each time you press [▼] or [▲], the volume level will change.
- The display will return to the length of the call.

Ex. Receiver volume: High
Speaker volume: level 6



If noise interferes with the conversation

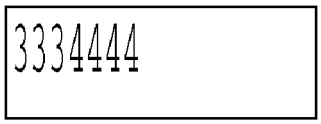
Extend the antenna fully, press FUNCTION/CH to select a clearer channel or move closer to the base unit.

To redial the last number dialed on the handset

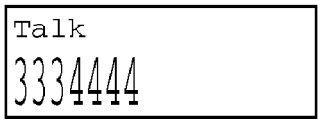
Press or and press REDIAL/PAUSE.

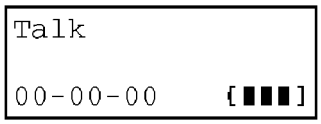
To dial after confirming the entered number

1 Dial a phone number.
- If you misdial, press CLEAR and dial again.



2 Press .
OR
To have a hands-free phone conversation, press , and when the other party answers talk into the microphone.
- After a few seconds, the display will show the length of the call and the battery strength.





3 To hang up, press OFF or place the handset on the base unit.

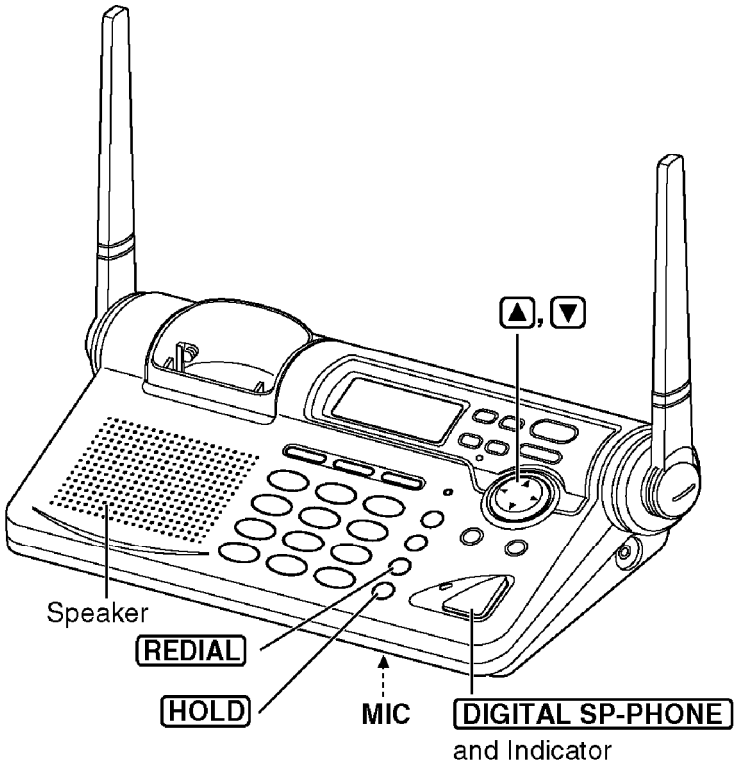
To redial after confirming the last number dialed

Press REDIAL/PAUSE and press or .

Lighted handset keypad

The handset dialing buttons will light when you press a button or lift the handset off the base unit, and flash when a call is received. The lights will go out about 10 seconds after pressing a button, lifting the handset or answering a call.

5.1.2. With the Base Unit (Digital Duplex Sperkerphone)



1 Press **DIGITAL SP-PHONE**.
- The DIGITAL SP-PHONE indicator lights.

Talk

2 Dial a telephone number.

Talk
1112222

3 When the other party answers, talk into the **MIC** (microphone).

Talk
00-00-00

4 To hang up, press **DIGITAL SP-PHONE**.
- The indicator light goes out.

off
00-00-00

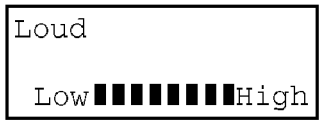
- To switch to the handset while using the base unit speakerphone:
  - If the handset is off the base unit, press [ ] or [ ].
  - If on the base unit, just lift up.
- During a call using the handset, the call can be switched to the base unit speakerphone by pressing **DIGITAL SP-PHONE** on the base unit.

Hands-free Digital Duplex Speakerphone
For best performance, please note the following:
- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press ▼ to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press ▼ to decrease the speaker volume.

To adjust the speaker volume (8 levels) while talking

To increase, press ▲.
To decrease, press ▼.

Ex. Level 8



To redial the last number dialed on the base unit

Press DIGITAL SP-PHONE and press REDIAL.

To put a call on hold

Press HOLD.

- The DIGITAL SP-PHONE indicator flashes.

To release the hold

From the base unit, press DIGITAL SP-PHONE.

From the handset, press or , or lift the handset off the base unit.

- If another phone is connected on the same line, you can also release the hold by lifting its handset.

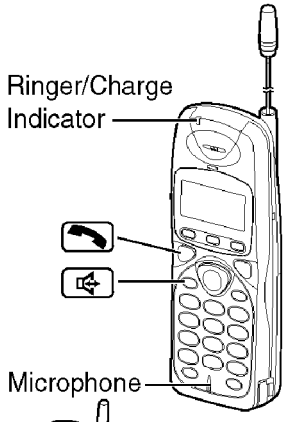
5.2. Answering Calls

When a call is received, the unit rings, "Incoming call" is displayed and the ringer/charge indicator flashes.
If you subscribe to a Caller ID service, the calling party information will be displayed after the first ring. The caller's name will be announced after the second ring (Talking Caller ID feature). If you have a maximum of 50 Caller ID names and numbers stored in the Caller List, and more than 30 names and numbers stored in the directory, the caller's name announcement may be heard after the third ring.

With the Handset

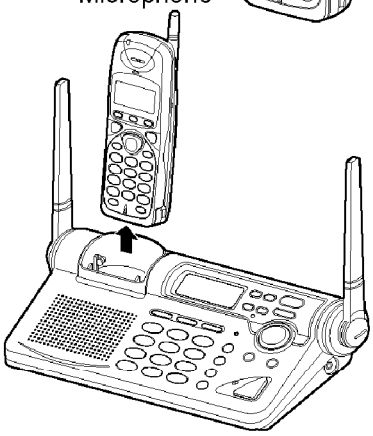
If the handset is off the base unit;
Press [ ].

•You can also answer a call by pressing any dialing button [0] to [9], [*] or [#] (— **Any Key Talk**).
OR
Press [ ], and when the other party answers talk into the microphone.



Auto Talk

If you set the Auto Talk feature to ON, you can answer a call by lifting the handset off the base unit without pressing [ ] or [ ].

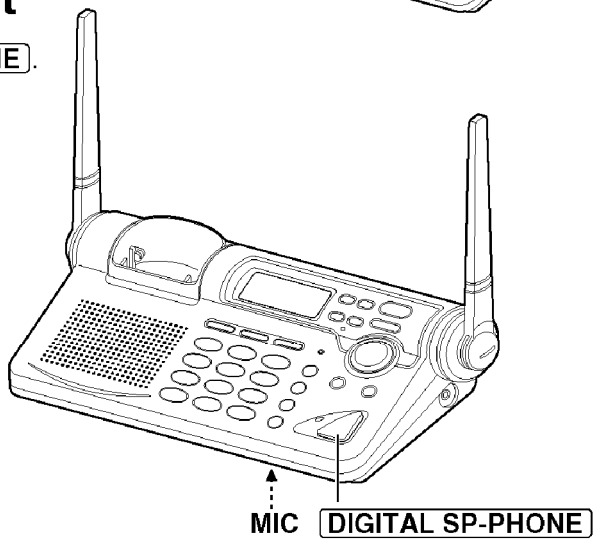


With the Base Unit

1 Press [DIGITAL SP-PHONE].

2 Talk into the **MIC**.

3 To hang up, press [DIGITAL SP-PHONE].



5.3. Flash Button

Pressing **FLASH/CALL WAIT/PLAYBACK** or **FLASH/CALL WAIT** allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

Selecting the flash time

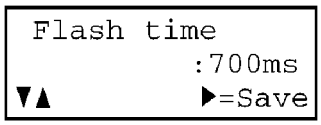
The flash time depends on your telephone exchange or host PBX. You can select the following flash times: "700, 600, 400, 300, 250, 110, 100 or 90 ms (milliseconds)". Your phone comes from the factory set to "700 ms". **Make sure the unit is in the standby mode initially.**

1 Press **FUNCTION/CH**.

2 Press ▼ or ▲ repeatedly until the arrow points to "Program", and press ▶ (Yes key).

3 Press ▼ or ▲ repeatedly until the arrow points to "Set flash time", and press ▶ (Yes key).

4 Press ▼ or ▲ repeatedly until the desired time is displayed, and press ▶ (Save key).
- A beep sounds.
- To return to the standby mode, press **OFF**.



- You can exit the programming mode any time by pressing **OFF**.
- If you are connected via a PBX, a longer flash time may be necessary to use PBX functions (transferring a call etc.). Consult your PBX supplier for the correct setting.

5.4. Listening to Message

You can see the total number of recorded messages on the base unit display. If the ANSWER ON indicator flashes, new messages have been recorded.

Listening to only new messages

Press [NEW MESSAGE] briefly.

- The unit announces the number of new messages and plays them back.

Listening to all recorded messages

Press and hold [NEW MESSAGE] until playback starts.

To adjust the speaker volume:
9 levels (0-8) are available while using the answering system. To increase, press [▲]. To decrease, press [▼].

- During each message playback, the message number is displayed. (Ex. While the first message is being played back, "Message 1" is displayed.)
- At the end of the last message, "End of final message" is heard. The unit will announce the remaining recording time if it is less than 5 minutes.

During playback

To **repeat** message	**To repeat from the beginning of the message** Press [◄]. •If you press within 5 seconds of playback, the previous message will be played.
To **skip** message	**To skip to the next message** Press [►].
To **stop** operation	Press [STOP]. •To resume playback, press [NEW MESSAGE]. •If you do not press any button for 60 seconds or if you press [STOP] again, the unit will return to the standby mode.

For Caller ID service users

During playback, the base unit display will show the name and/or number of the caller whose message is being played.

```
JACK SMITH
1-222-333-4444
 - Message 3 -
```

To call back the displayed number:
During playback, press DIGITAL SP-PHONE.
•The unit stops playback and automatically dials the displayed phone number.

•After listening to new incoming messages, "√" will be added to the call entries in the Caller ID Caller List.

From the Handset

If someone else is in the room and you want to listen to the recorded messages privately, you can use the handset.

1 Handset:
Press FLASH/CALL WAIT/PLAYBACK.
•The number of new messages is heard on the handset.

2 Base unit:
To listen to new messages, press NEW MESSAGE briefly. To listen to all messages, press and hold NEW MESSAGE until playback starts.
•The messages will be heard on the handset.
•◀, ▶ and STOP can also be used during playback.

3 When finished, press FLASH/CALL WAIT/PLAYBACK or place the handset on the base unit.

5.5. Caller ID Service

This unit is compatible with a Caller ID service offered by your telephone company. If you subscribe to a Caller ID service, the calling party's information will be shown on the handset and base unit displays after the first ring. After the second ring the handset and the base unit will announce the displayed name following every ring (Talking Caller ID feature). You will audibly be informed of whom is calling you. Name and telephone number Caller ID service is required for this feature.

- Only the name will be announced.

- If you have a maximum of 50 Caller ID names or numbers stored in

the Caller List, and more than 30 names and numbers stored in the directory, the caller's name announcement may be heard after the third ring.

The unit can record information of up to 50 different callers in the Caller List. The Caller List information is sorted by the most recent to the oldest call. When the 51st call is received, the first call is deleted.

Using the list, you can automatically call back a caller. You can store the caller's names and numbers from the Caller List into the directory.

If you subscribe to both Caller ID and Call Waiting services, when a second call is received while talking, the new caller's name and phone number will be displayed.

5.5.1. How caller information is displayed when a call is received

The handset and base unit displays show the caller's name and number after the rst ring.

- After you answer the call, the display will show the length of the call.

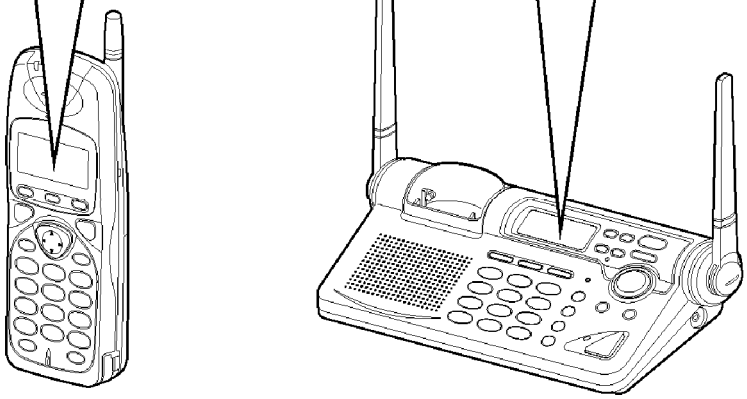
- Caller information cannot be displayed in the following cases:
  - —If the caller dialed from an area which does not provide a Caller ID service, the display will show "Out of area".
  - —If the caller has requested not to display his/her information, the display will show "Private caller".
- If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.
- The name display service may not be available in some areas. For further information, please contact your telephone company.

5.5.2. How caller information is displayed and a caller's name is announced when a call is received

The handset and base unit displays show the caller's name and number after the first ring. After the second ring, for example, "Call from ROBINSON, TINA" will be heard through the handset and base unit speakers following every ring.

ROBINSON, TINA
1-000-222-3333

- After you answer the call, the display will show the length of the call.



•Caller information cannot be displayed in the following cases:
—If the caller dialed from an area which does not provide a Caller ID service, "Out of area" will be displayed and announced.
—If the caller has requested not to display his/her information, "Private caller" will be displayed and announced.
•If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.
•The name display service may not be available in some areas. For further information, please contact your telephone company.

Using the Talking Caller ID feature:

•Name and telephone number Caller ID service is required. For further information, please contact your telephone company.
•If a caller dialed from an area which does not provide a name display service, the unit will announce "Call from out of area", "Call from private caller", "Call from out of area, number available" or "Number available".
•You can adjust the handset and base unit speaker volumes during name announcements. Press ▼ or ▲ on the handset or the base unit.
6 levels are available for the handset. 8 levels are available for the base unit.
(If you adjust the handset speaker volume while the unit is just ringing, the speaker volume will not be changed but the ringer volume will be changed.)
•If the handset ringer volume is OFF, the handset will not announce callers' names. If the base unit ringer volume is OFF, the base unit will not announce callers' names.
•If the feature is OFF, the unit does not announce callers' names.
•A second caller name will not be announced while talking with the first caller (For Call Waiting Service Users).
•Name pronunciation may vary. Name pronunciation quality is based on most commonly names used in the United States.
•If you subscribe to a Distinctive Ring Service (IDENTA-RING for example) from your telephone company with 2 or 3 consecutive rings, your unit may mute one or more of the rings in order to announce the name of the caller.

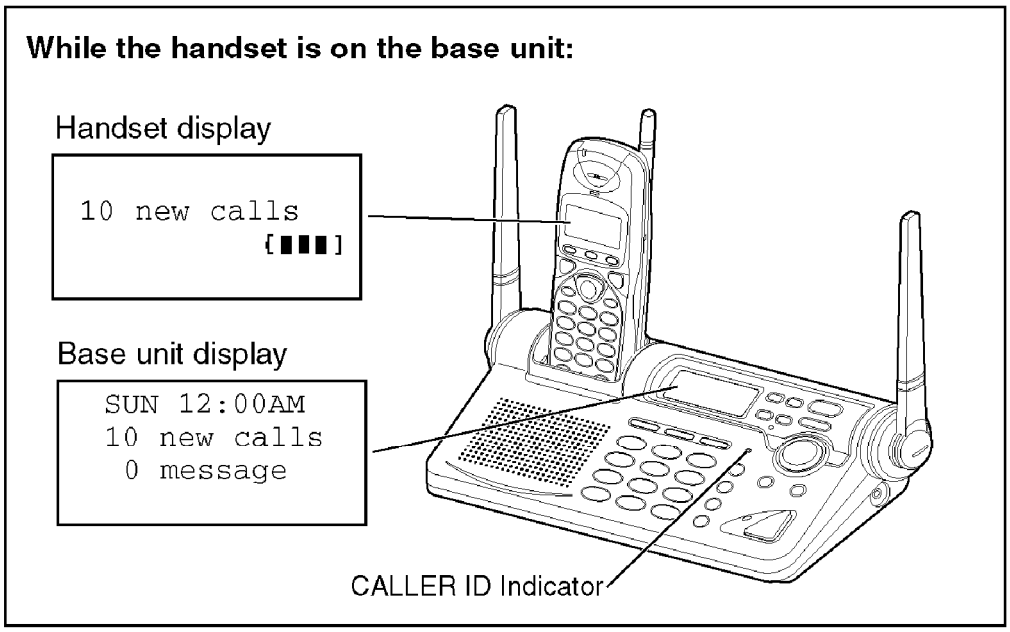
Call group feature (Dual-Color Visual Ringer):

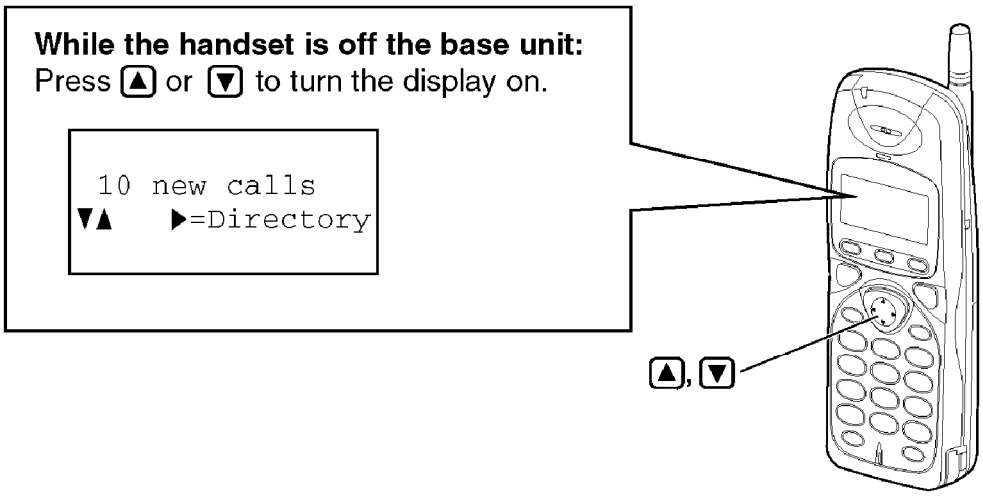
If you receive a caller ID call from one of the phone numbers stored in the directory and the item has set the feature;
– the handset and base unit will ring with a different ringer pattern,
– the handset and base unit displays will light in orange, and
– the ringer/charge indicator will flash in orange.
You can then distinguish the caller from others easily. To use this feature, store items in the directory and turn the feature on for required items.

5.5.3. To check the number of new calls

When new calls have been received, the CALLER ID indicator flashes on the base unit. The handset and base unit displays show the number of new calls.

Ex. You have received 10 new calls.





•If "No items stored" is displayed, the Caller List is empty.

5.5.4. Viewing the caller list

You can view the caller list with the handset or the base unit. Caller List information includes the caller's name and phone number, the time and date the call was received, and the number of times that caller called.
Make sure the unit is in the standby mode initially.

With the handset

1 Press ▼ or ▲ to enter the Caller List.

- The display will show, for example, the following.

```
  2 new calls
▼▲   ▶=Directory
```

- You can go to the directory list by pressing ▶.

2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.

- To scroll between callers, press ▼ or ▲.

```
SMITH, JACK
1-222-333-4444
 3:10P JUN.10
```

3 To exit the list, press OFF.

- The handset will return to the standby mode.

With the base unit

1 Press ▼ or ▲ to enter the Caller List.

- The display will show, for example, the following.

```
  2 new calls
▼▲   ▶=Directory
```

- You can go to the directory list by pressing ▶.

2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.

- To scroll between callers, press ▼ or ▲.

```
SMITH, JACK
1-222-333-4444
 3:10P JUN.10
```

3 To exit the list, press EXIT or STOP.

- The base unit will return to the standby mode.

- If "No items stored" is displayed, the Caller List is empty.
- If there is no name information for a caller, the display will only show the phone number.
- While you are viewing the Caller List with the handset, another person cannot access the list using the base unit, and vice versa.

What "√" means

When the display shows "√", you have already viewed this calling information, answered the call, called back the caller or played back the message. If the same caller calls again, the call entry with "√" will be replaced with the new call entry.

```
SMITH, JACK
1-222-333-4444
 3:10P JUN.10 √
```

If a caller calls more than once

The number of times the same caller called is displayed (×2 to ×9). The date and time of the most recent call will be recorded. After checking, ×2 to ×9 will be replaced with "√".

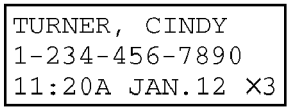
```
SMITH, JACK
1-222-333-4444
 3:10P JUN.10 ×3
```

5.5.5. Calling back from the caller list

With the handset

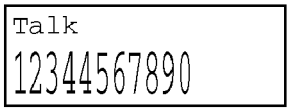
1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to find the desired caller.



3 Press 📞 or 🔊.

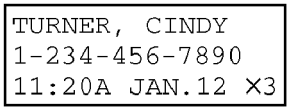
- The displayed phone number is dialed automatically.



With the base unit

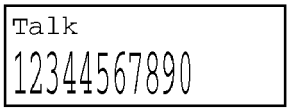
1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to find the desired caller.



3 Press DIGITAL SP-PHONE.

- The displayed phone number is dialed automatically.



- In some cases, you may have to edit the number before dialing. (Ex. You may have to delete "1" and the area code.)
- If a phone number is not displayed in the caller information, you cannot call back that caller.

5.5.6. Editing the caller's phone number

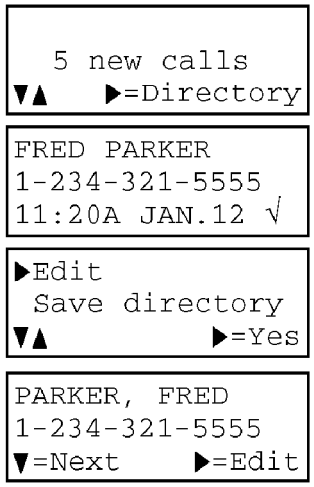
You can edit a phone number into one of 4 patterns using the handset or the base unit.

Make sure the unit is in the standby mode initially.

5.5.6.1. With the handset

1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to nd the desired caller, and press ▶.



3 While the arrow points to "Edit", press ▶ (Yes key).

4 Press ▶ (Edit key) to select a pattern.

•Each time you press ▶, the number is rearranged into one of 4 different patterns.

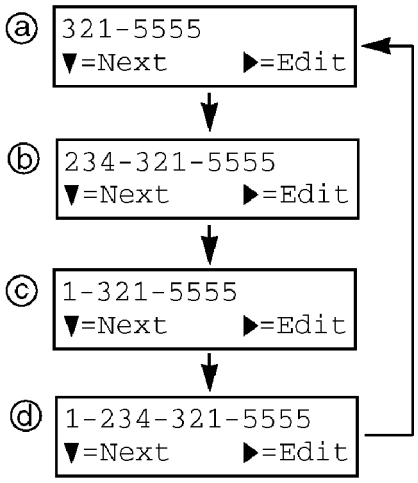
ⓐ [Phone no.]

ⓑ [Area code] – [Phone no.]

ⓒ 1 – [Phone no.]

ⓓ 1 – [Area code] – [Phone no.]

•The order in which patterns ⓐ – ⓓ are displayed depends on how the telephone number is displayed in step 3.



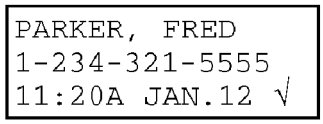
5 After editing the number, you can continue with calling back or storing procedures. To call back, press [phone] or [speaker] .
To store the number in the directory, press ▼ (Next key), and follow the instructions on the display.

•The number edited in step 4 will not be maintained in the Caller List.

5.5.6.2. With the base unit

1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to nd the desired caller.



3 Press EDIT to select a pattern.

•Each time you press EDIT, the number is rearranged into one of 4 different patterns.

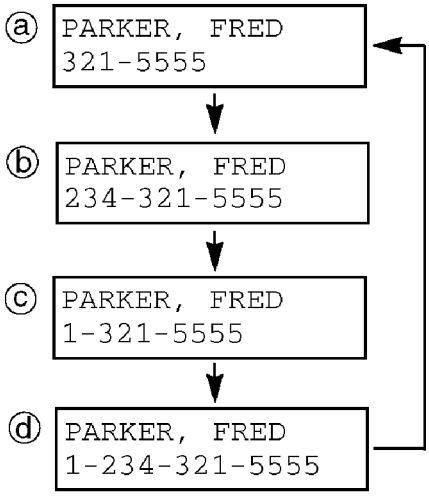
ⓐ Phone no.

ⓑ Area code – Phone no.

ⓒ 1 – Phone no.

ⓓ 1 – Area code – Phone no.

•The order in which patterns ⓐ–ⓓ are displayed depends on how the telephone number is displayed in step 2.



4 After editing the number, you can continue with calling back. Press DIGITAL SP-PHONE.

•The number edited in step 3 will not be maintained in the Caller List.

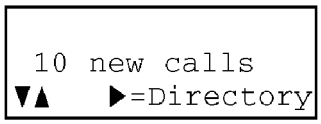
5.5.7. Storing caller list information is the directory

You can store names and phone numbers that are in the Caller List into the directory. You can also turn the call group feature on for certain callers.

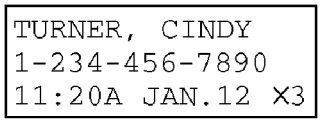
Storing must be carried out with the handset.

Make sure the unit is in the standby mode initially.

1 Press ▼ or ▲ to enter the Caller List.



2 Press ▼ or ▲ repeatedly to nd the caller you want to store in the directory, and press ▶ (Yes key).

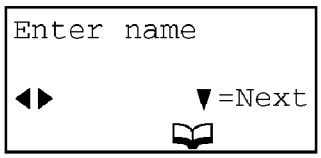


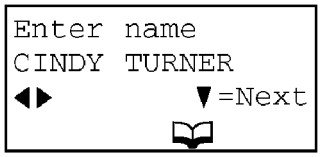
3 Press ▼ or ▲ to select "Save directory", and press ▶ (Yes key).

If there is no name information for the caller, "Enter name" will be displayed.

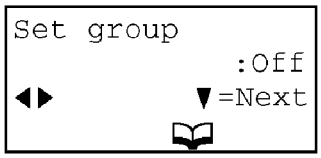
a) If a name is not required, press ▼ (Next key) twice.

b) If a name is required, enter the name. When finished, press ▼ (Next key) twice.





4 To turn the call group feature on, select "On" by pressing ◀ or ▶.
If not required, select "Off".



- You can exit the programming mode any time by pressing OFF.
- If the display shows "Directory full" in step 3, press OFF to exit the list.
- You cannot store caller information in the directory if a phone number is not displayed.
- If 3 beeps sound and the display shows "Save error", move closer to the base unit and start again from step 1.

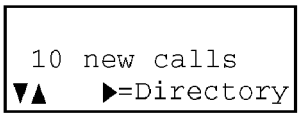
5.5.8. Erasing caller list information

After checking the Caller List, you can erase some or all of the entries with the handset or the base unit.
Make sure the unit is in the standby mode initially.

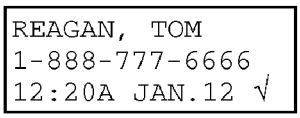
To erase a specic caller from the Caller List

With the handset/base unit:

1 Press ▼ or ▲ to enter the Caller List.



2 Press ▼ or ▲ repeatedly to find the caller you want to erase from the Caller List.



3 Press CLEAR.

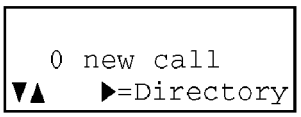
- A beep sounds and the information is erased.
- To erase other items, repeat from step 2.
- To return to the standby mode, press OFF.

To erase all entries in the Caller List

Before erasing all entries, make sure that "0 new call" is displayed.

With the handset/base unit:

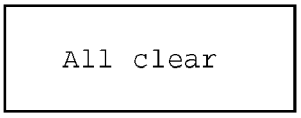
1 Press ▼ or ▲ to enter the Caller List.



2 Press CLEAR.

3 Press ▼ or ▲ to select "All clear".

4 Press ▶ (Yes key) or CLEAR.



- A beep sounds and all entries are erased.

6. DISASSEMBLY INSTRUCTIONS

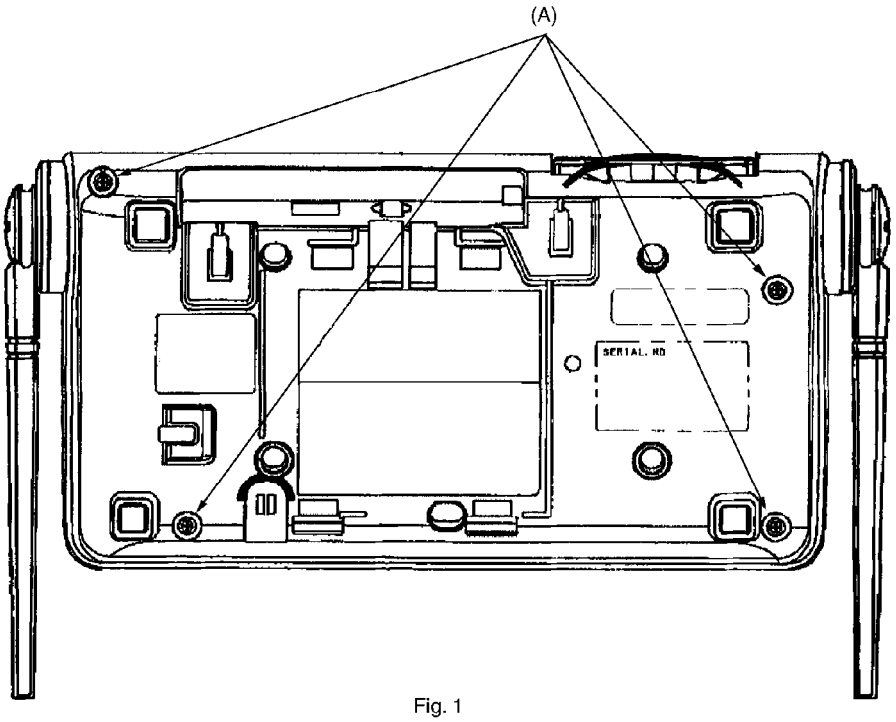

(A)
SERIAL NO

Fig. 1

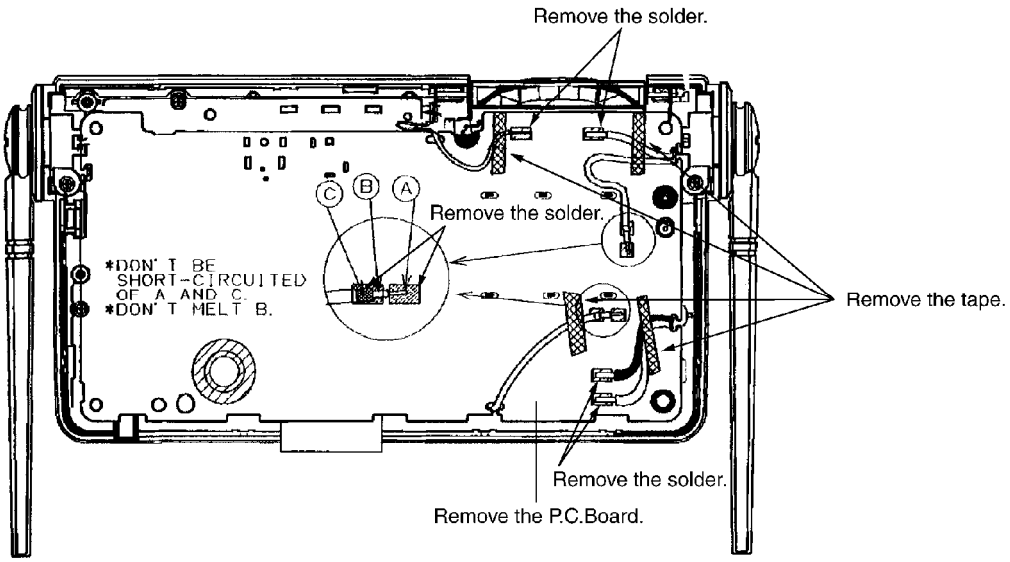

Remove the solder.
C
B
A
Remove the solder.
*DON'T BE
SHORT-CIRCUITED
OF A AND C.
*DON'T MELT B.
Remove the tape.
Remove the solder.
Remove the P.C.Board.

Fig. 2

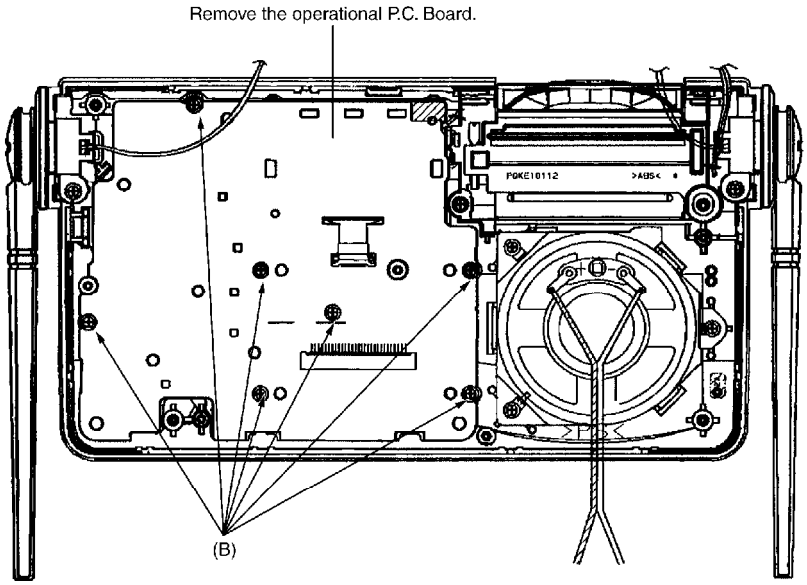


Fig. 3

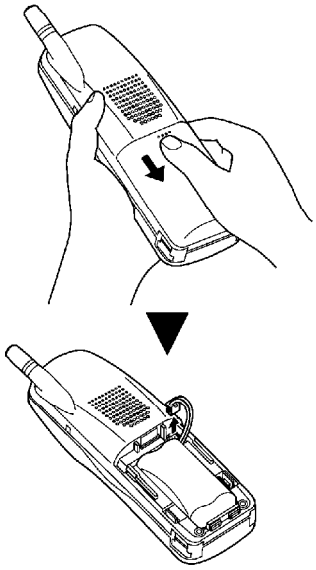


Fig. 4

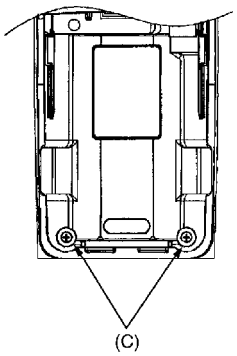


Fig. 5

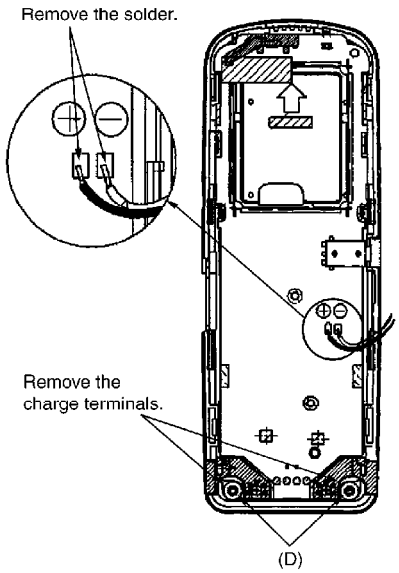
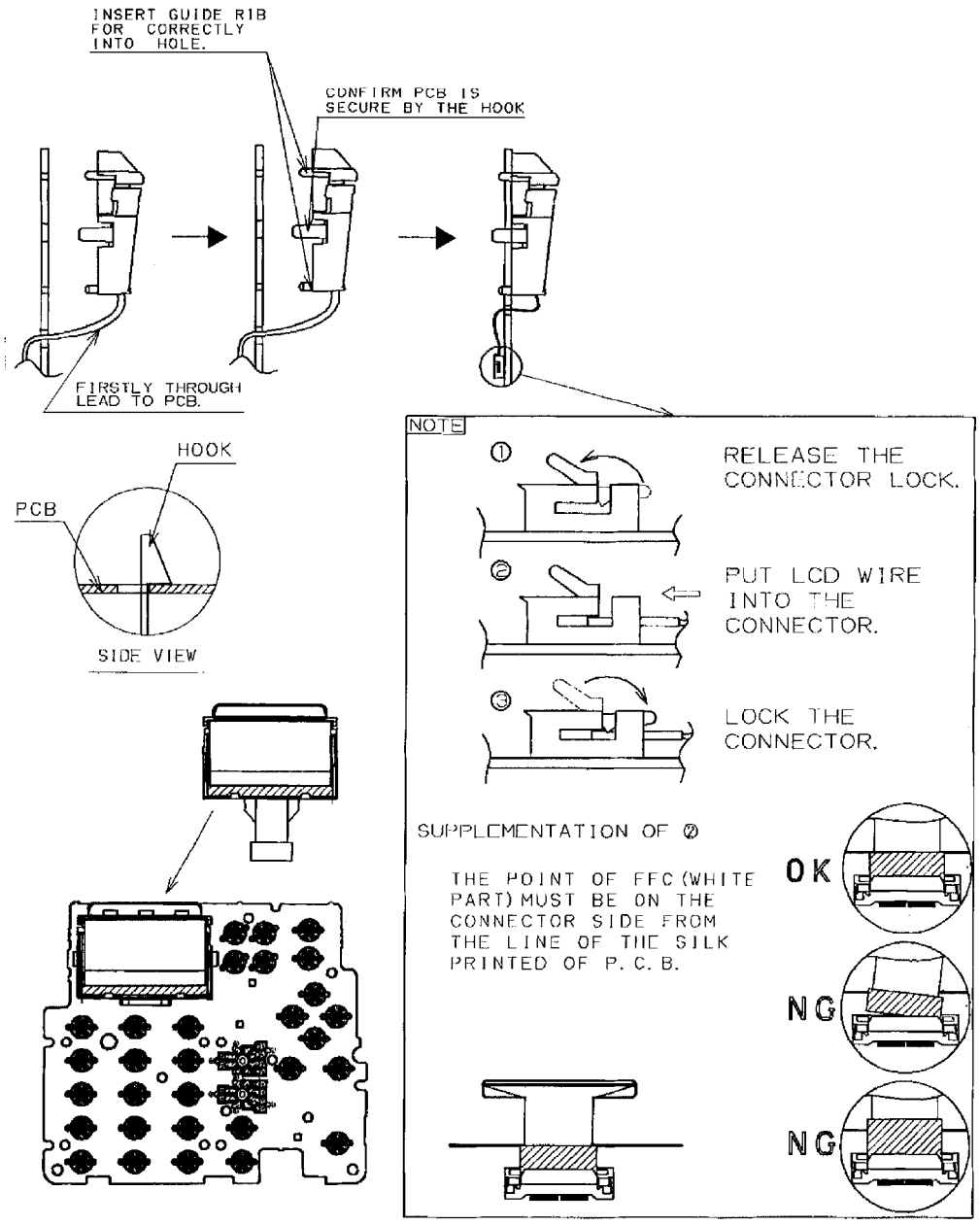


Fig. 6

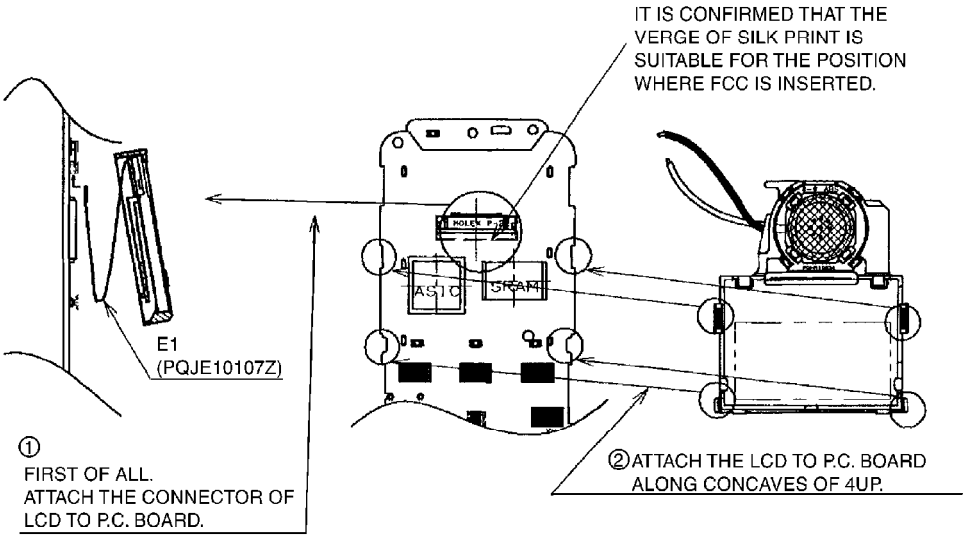
Shown in Fig.-	To Remove	Remove
1	Lower Cabinet	Screws (2.6 × 14) × 4
2	Main P.C. Board	Remove the P.C. Board
3	Operational P.C. Board	Screws (2.6 × 8) × 7
4	Battery Cover	Remove the Battery Cover
5	Rear Cabinet	Screws (2 × 8) × 2
6	Main P.C. Board	Remove the P.C. Board

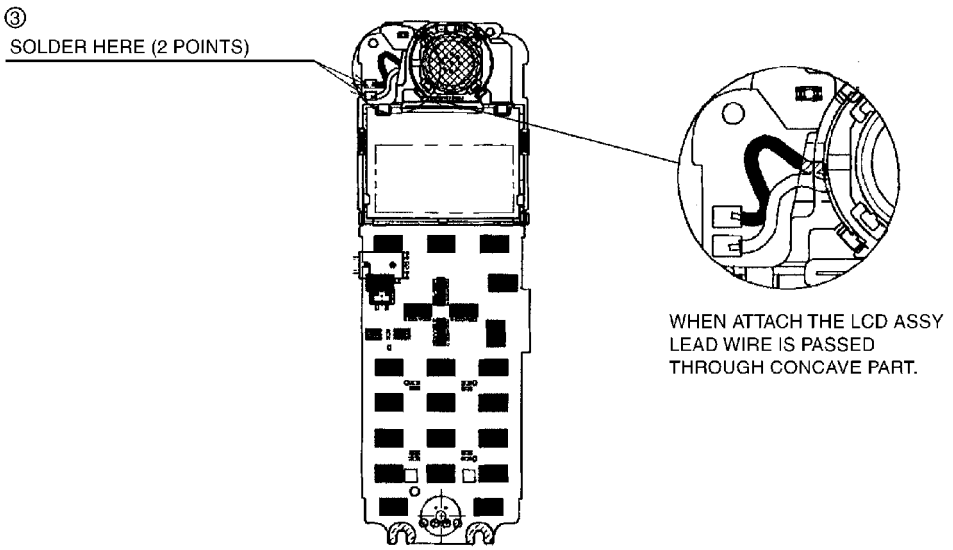
7. ASSEMBLY INSTRUCTIONS

7.1. Assembly the LCD to P.C. Board (Base Unit)


INSERT GUIDE RIB FOR CORRECTLY INTO HOLE.
CONFIRM PCB IS SECURE BY THE HOOK
FIRSTLY THROUGH LEAD TO PCB.
HOOK
PCB
SIDE VIEW
NOTE
RELEASE THE CONNECTOR LOCK.
PUT LCD WIRE INTO THE CONNECTOR.
LOCK THE CONNECTOR.
SUPPLEMENTATION OF ②
THE POINT OF FFC (WHITE PART) MUST BE ON THE CONNECTOR SIDE FROM THE LINE OF THE SILK PRINTED OF P. C. B.
OK
NG
NG

7.2. Assembly the LCD to P.C. Board (Handset)





7.3. Replace the RF unit

For HS

Follow this procedure below when replacing HS RF unit.

1. **Remove speaker cables of LCD unit on HS main board. And remove LCD unit.**
2. **Remove solder on six legs of RF unit.**
3. **Remove solder on all pads of RF unit.**
4. **Replace defective RF unit with new HS RF unit.**

   NOTE:

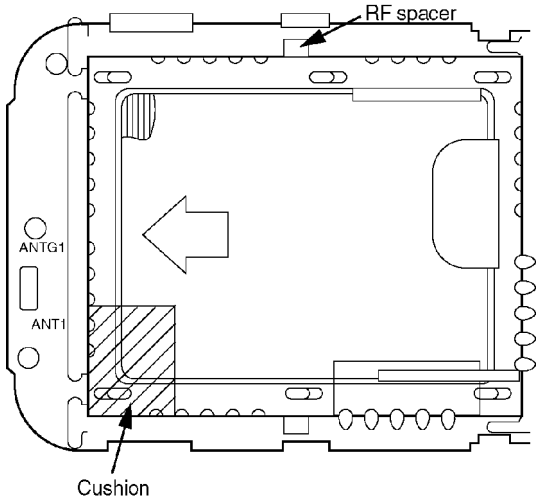
   Do not use BU RF unit for HS one.

HS RF unit is different from BU one.

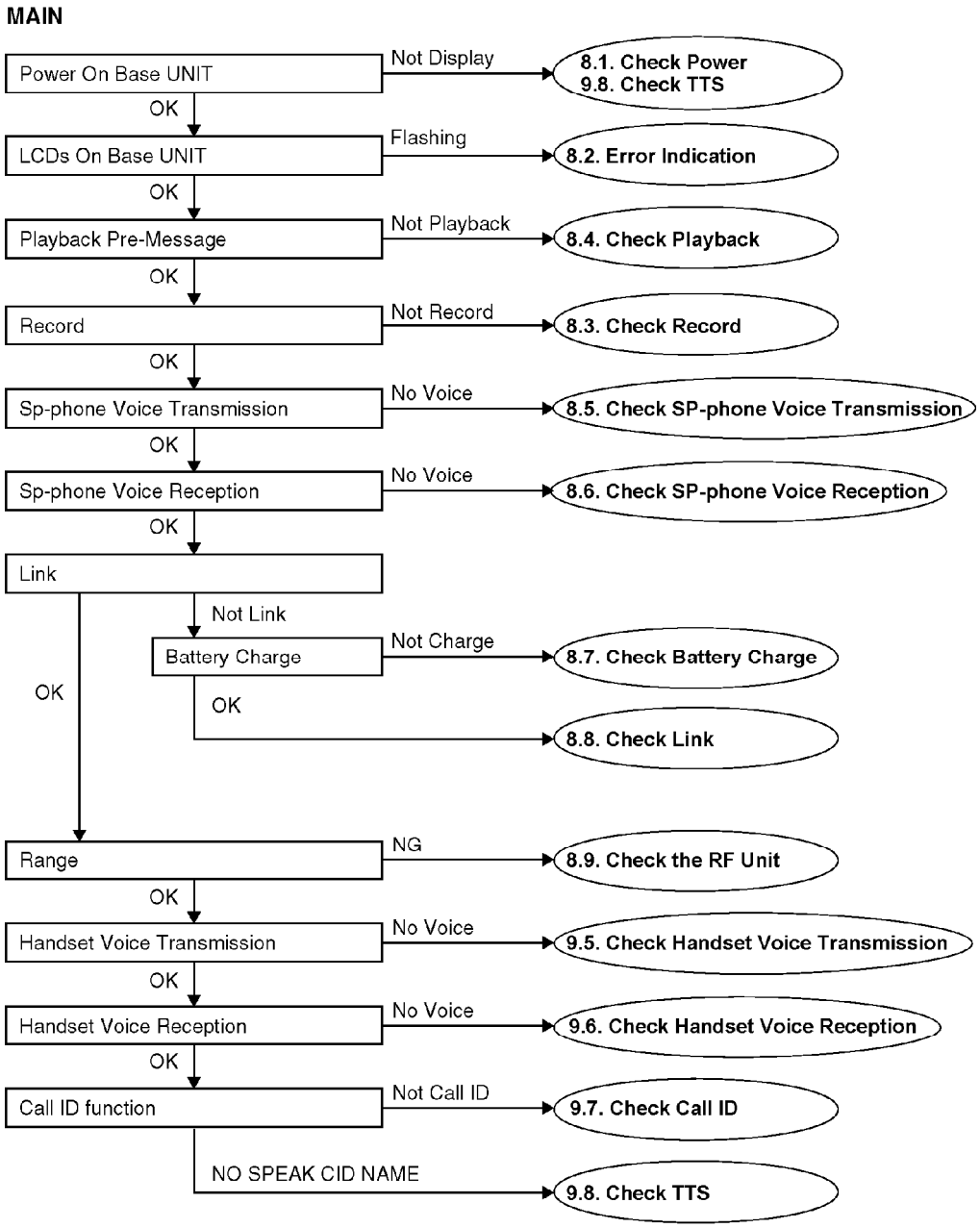
5. **Solder all pads of RF unit.**
6. **Solder six Rf legs.**
7. **Put LCD unit and solder speaker wire.**

NOTE:

Speaker wire has polarity.



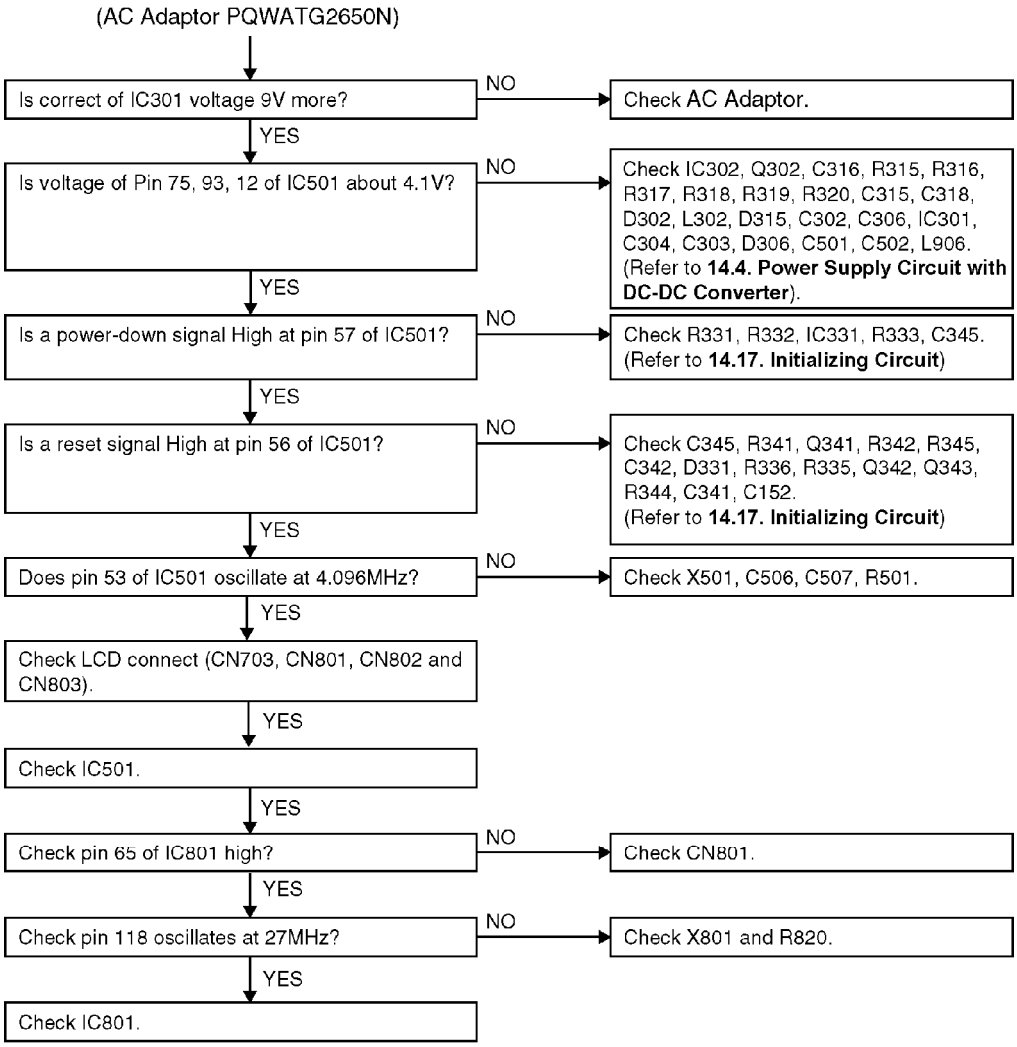
8. TROUBLESHOOTING GUIDE



8.1. Check Power

BASE UNIT

Is the AC Adaptor inserted into 120V outlet?


(AC Adaptor PQWATG2650N)
Is correct of IC301 voltage 9V more?
NO
Check AC Adaptor.
YES
Is voltage of Pin 75, 93, 12 of IC501 about 4.1V?
NO
Check IC302, Q302, C316, R315, R316, R317, R318, R319, R320, C315, C318, D302, L302, D315, C302, C306, IC301, C304, C303, D306, C501, C502, L906. (Refer to 14.4. Power Supply Circuit with DC-DC Converter).
YES
Is a power-down signal High at pin 57 of IC501?
NO
Check R331, R332, IC331, R333, C345. (Refer to 14.17. Initializing Circuit)
YES
Is a reset signal High at pin 56 of IC501?
NO
Check C345, R341, Q341, R342, R345, C342, D331, R336, R335, Q342, Q343, R344, C341, C152. (Refer to 14.17. Initializing Circuit)
YES
Does pin 53 of IC501 oscillate at 4.096MHz?
NO
Check X501, C506, C507, R501.
YES
Check LCD connect (CN703, CN801, CN802 and CN803).
YES
Check IC501.
YES
Check pin 65 of IC801 high?
NO
Check CN801.
YES
Check pin 118 oscillates at 27MHz?
NO
Check X801 and R820.
YES
Check IC801.

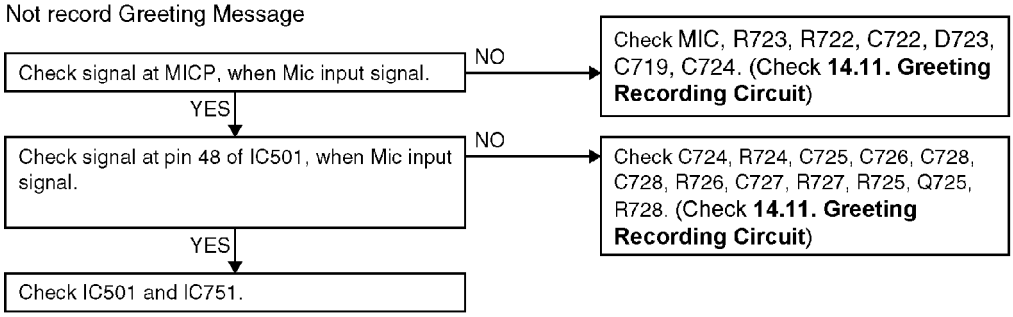
8.2. Error Indication

Symptom	Remedy
The Flash Memory (IC751) is defective when all LED's of the base unit flash.	1. Confirm Flash Memory is equipped. 2. Confirm the connection of Flash Memory. 3. Confirm the power supply of Flash Memory. When no error is found in above-mentioned items, Flash Memory has a defect. Replace Flash Memory.

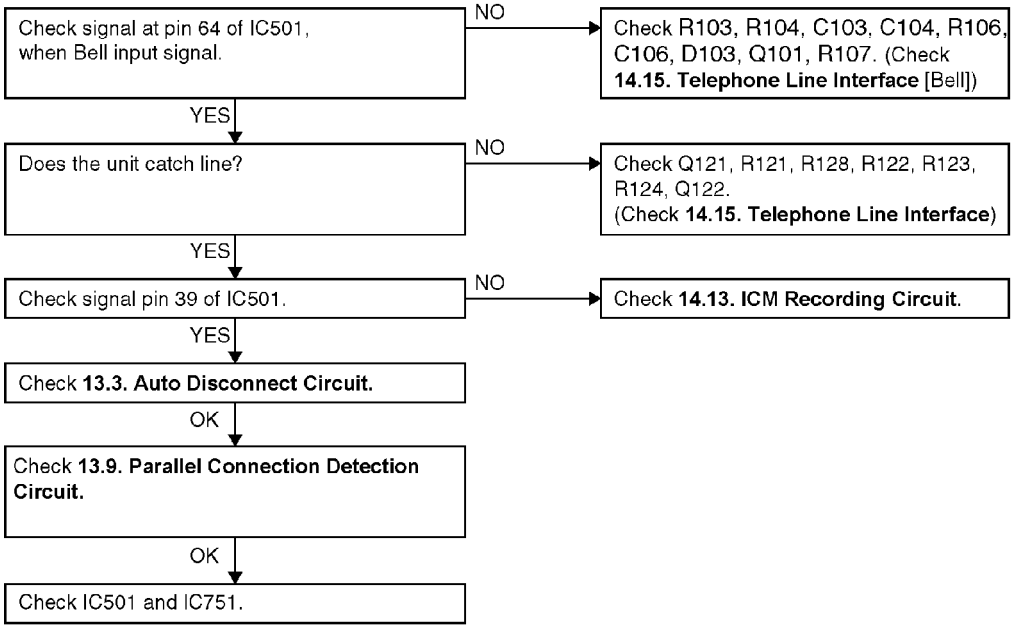
8.3. Check Record

BASE UNIT

Not record Greeting Message

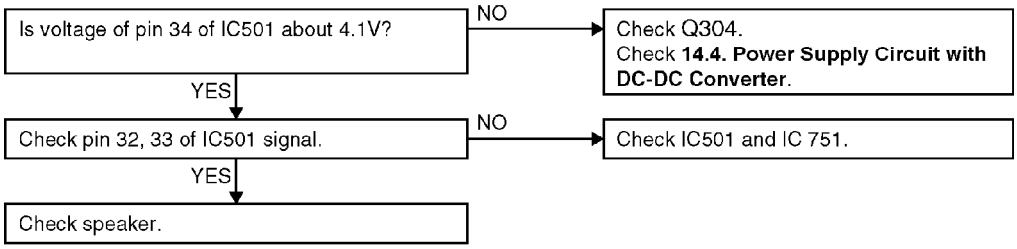

Check signal at MICP, when Mic input signal.
NO
Check MIC, R723, R722, C722, D723, C719, C724. (Check 14.11. Greeting Recording Circuit)
YES
Check signal at pin 48 of IC501, when Mic input signal.
NO
Check C724, R724, C725, C726, C728, C728, R726, C727, R727, R725, Q725, R728. (Check 14.11. Greeting Recording Circuit)
YES
Check IC501 and IC751.

Not record Incoming Message


Check signal at pin 64 of IC501, when Bell input signal.
NO
Check R103, R104, C103, C104, R106, C106, D103, Q101, R107. (Check 14.15. Telephone Line Interface [Bell])
YES
Does the unit catch line?
NO
Check Q121, R121, R128, R122, R123, R124, Q122. (Check 14.15. Telephone Line Interface)
YES
Check signal pin 39 of IC501.
NO
Check 14.13. ICM Recording Circuit.
YES
Check 13.3. Auto Disconnect Circuit.
OK
Check 13.9. Parallel Connection Detection Circuit.
OK
Check IC501 and IC751.

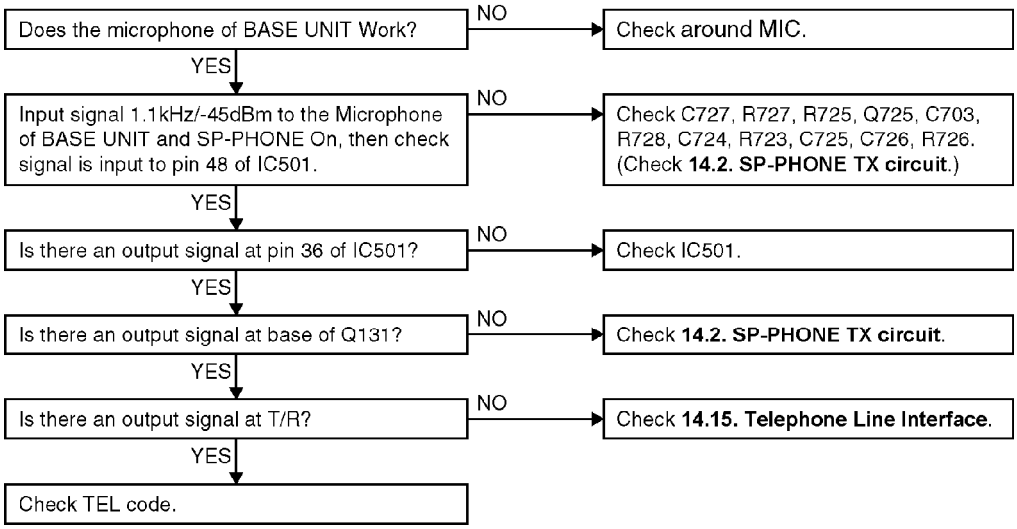
8.4. Check Playback

BASE UNIT


Is voltage of pin 34 of IC501 about 4.1V?
NO
Check Q304. Check 14.4. Power Supply Circuit with DC-DC Converter.
YES
Check pin 32, 33 of IC501 signal.
NO
Check IC501 and IC 751.
YES
Check speaker.

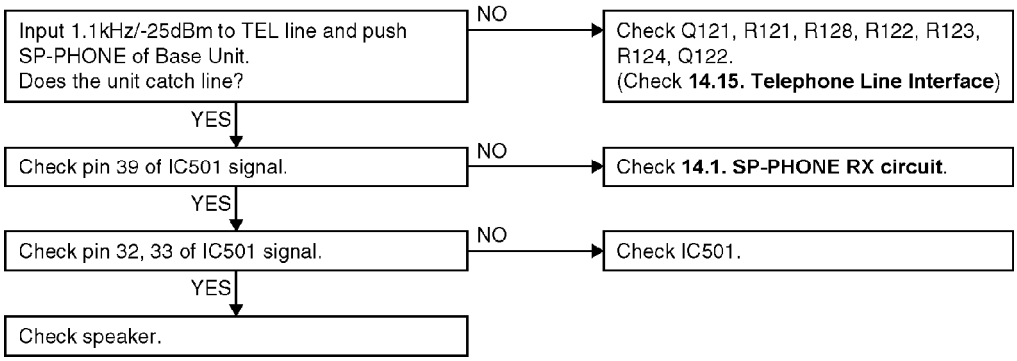
8.5. Check SP-phone Voice Transmission

BASE UNIT

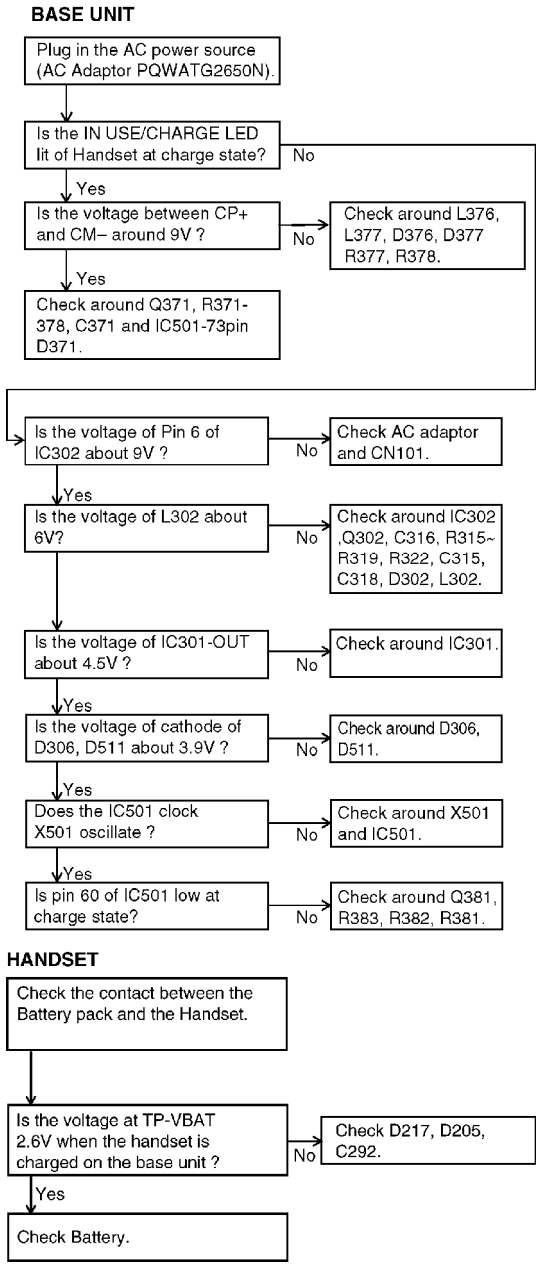

Does the microphone of BASE UNIT Work?
NO
Check around MIC.
YES
Input signal 1.1kHz/-45dBm to the Microphone of BASE UNIT and SP-PHONE On, then check signal is input to pin 48 of IC501.
NO
Check C727, R727, R725, Q725, C703, R728, C724, R723, C725, C726, R726. (Check 14.2. SP-PHONE TX circuit.)
YES
Is there an output signal at pin 36 of IC501?
NO
Check IC501.
YES
Is there an output signal at base of Q131?
NO
Check 14.2. SP-PHONE TX circuit.
YES
Is there an output signal at T/R?
NO
Check 14.15. Telephone Line Interface.
YES
Check TEL code.

8.6. Check SP-phone Voice Reception

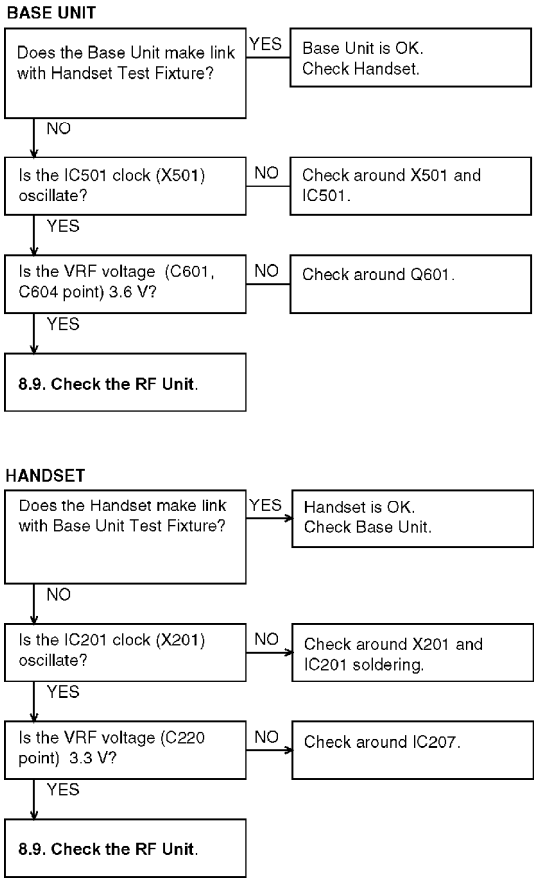
BASE UNIT



8.7. Check Battery Charge


BASE UNIT
Plug in the AC power source (AC Adaptor PQWATG2650N).
Is the IN USE/CHARGE LED lit of Handset at charge state?
No
Yes
Is the voltage between CP+ and CM– around 9V ?
No
Check around L376, L377, D376, D377 R377, R378.
Yes
Check around Q371, R371-378, C371 and IC501-73pin D371.
Is the voltage of Pin 6 of IC302 about 9V ?
No
Check AC adaptor and CN101.
Yes
Is the voltage of L302 about 6V?
No
Check around IC302 ,Q302, C316, R315~R319, R322, C315, C318, D302, L302.
Is the voltage of IC301-OUT about 4.5V ?
No
Check around IC301.
Yes
Is the voltage of cathode of D306, D511 about 3.9V ?
No
Check around D306, D511.
Yes
Does the IC501 clock X501 oscillate ?
No
Check around X501 and IC501.
Yes
Is pin 60 of IC501 low at charge state?
No
Check around Q381, R383, R382, R381.
HANDSET
Check the contact between the Battery pack and the Handset.
Is the voltage at TP-VBAT 2.6V when the handset is charged on the base unit ?
No
Check D217, D205, C292.
Yes
Check Battery.

8.8. Check Link



8.9. Check the RF Unit

8.9.1. Finding out the Defective Unit

Prepare HS Test Fixture and BU Test Fixture. Place the HS Test Fixture on the cradle of the base unit for checking, then confirm that they are linked. Place the handset for checking on the cradle of the BU Test Fixture, then confirm that they are linked. How to confirm the link is as follows; press the TALK button and confirm Handset in use' is displayed on BU LCD.

8.9.2. Check Items

The headset Jack has been wired as a switch to control Normal and test modes on this "HS Test Fixture".

8.9.2.1. Handset Test Fixture for Base Unit

Test Fixture has two mode.

1. TEST mode:
Use Test Fixture without headset plug inserted.
Then Test Fixture is in TEST mode.

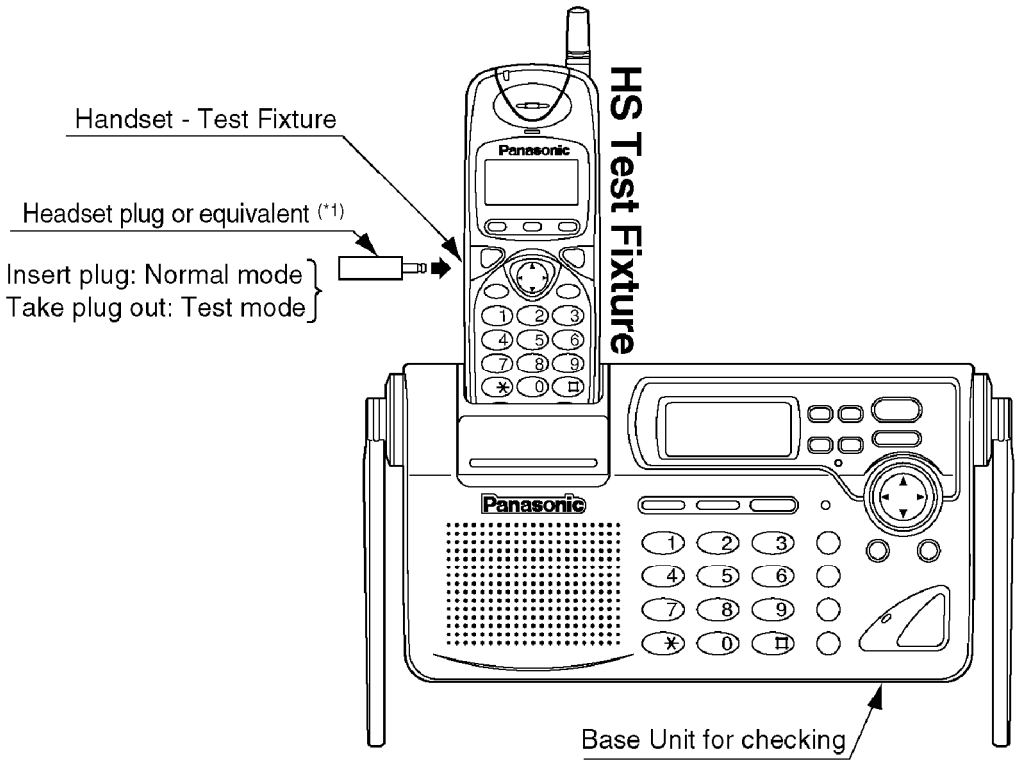
2. Normal mode:
Plug headset plug into headset jack.
Then Test Fixture is in Normal mode.

NOTE:

Audio is coming from Receiver whether headset plug is inserted or not.

This test simulates the handset is at very large distance from the base unit and the TX signal from handset to base is very small.
Procedure: First place handset Test Fixture on base under test to charge (exchange security code); then remove handset from base after you hear a beep; then press TALK to operate. The LCD will show TALK. This means that the base unit sensitivity is OK.

NOTE:
1) Only KX-TG2680N with marks HS Test Fixture can be used for troubleshooting. Regular KX-TG2680N production samples does not have the software needed for troubleshooting.



8.9.2.2. Base Unit Test Fixture for Handset

The headset Jack has been wired as a switch to control normal and test modes on this BU Test Fixture.
Test Fixture has two mode.

1. **TEST mode:**
   Use Test Fixture without headset plag inserted.
   Then Test Fixture is in TEST mode.
2. **Normal mode:**
   Plug headset plug into headset jack.
   Then Test Fixture is in Normal mode.

NOTE:

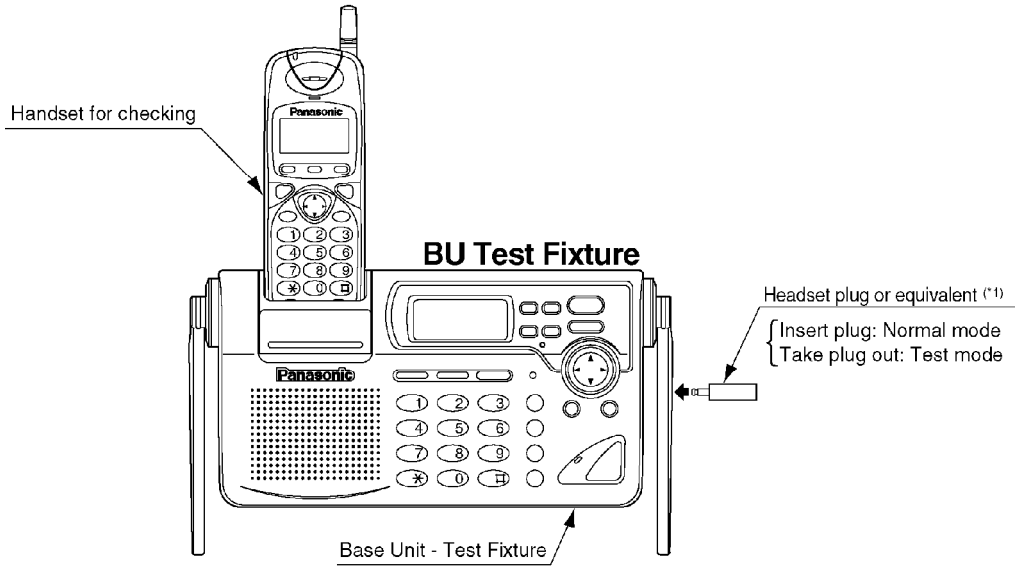
Audio is coming from Receiver whether headset plug is inserted or not.

This test simulates the handset is at very large distance from the base unit and the TX signal from base to handset is very small.

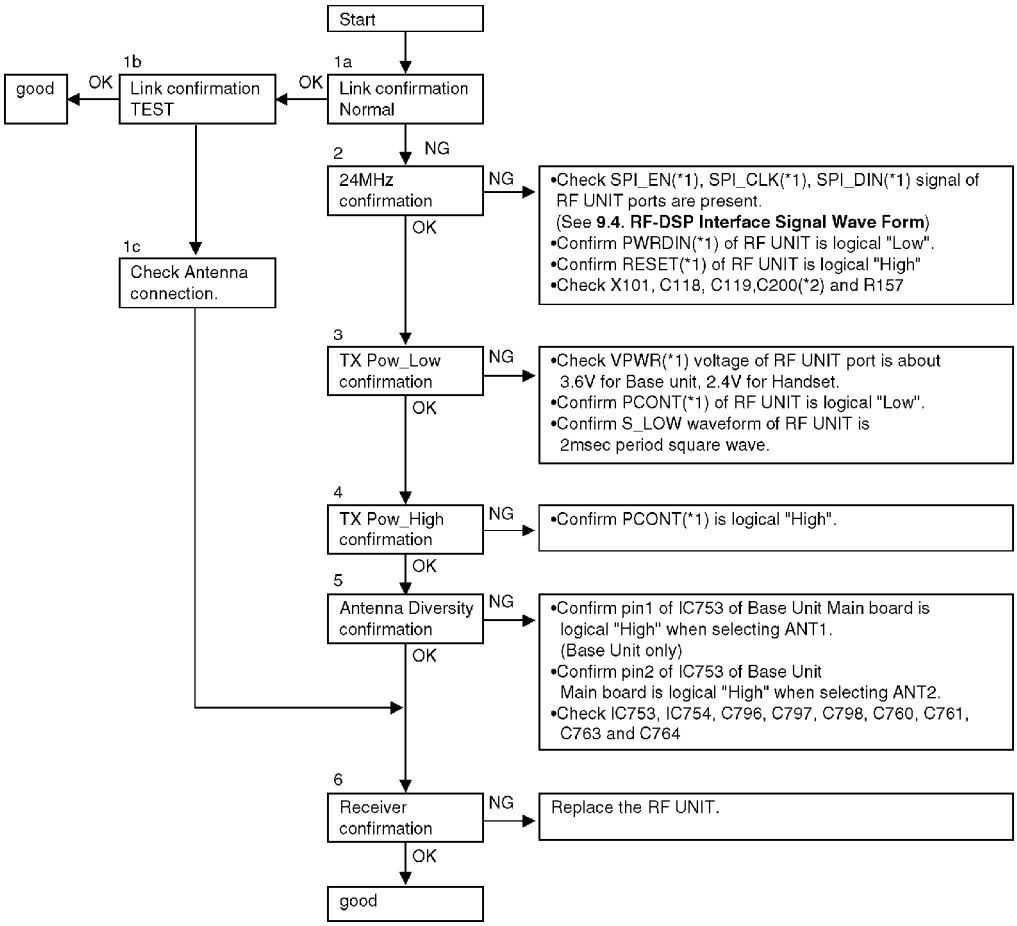
Procedure: First, place handset under test to charge (exchange security code), then remove handset from base after you hear a beep. Press TALK button on handset and if it links with the base, then this handset sensitivity is OK.

NOTE:

1) Only KX-TG2680N with marks BU Test Fixture can be used for troubleshooting. Regular KX-TG2680N production samples does not have the software needed for troubleshooting.


Handset for checking
BU Test Fixture
Headset plug or equivalent (*1)
Insert plug: Normal mode
Take plug out: Test mode
Base Unit - Test Fixture

8.9.3. RF Check Flowchart



(*1) See RF Unit Reference Drawing.
(*2) Base unit RF only.

8.9.4. Check Table for RF Block

No.	Item	BU (Base unit) (*1)	HS (Handset) (*1)
1a	Link confirmation Normal	1. Insert headset plug to headset jack of "HS Test Fixture". 2. Press [TALK] key of "HS Test Fixture" to establish link about one foot (30cm) away from "Base unit". 3. Confirm to link.	1. Insert headset plug to head of "BU Test Fixture". 2. Press [TALK] key of "Hands establish link about one foot (away from "BU Test Fixture". 3. Confirm to link.
1b	Link confirmation Test	1. Take headset plug off from headset jack of "HS Test Fixture". 2. Press [TALK] key of "HS Test Fixture" to establish link about one foot (30cm) away from "Base unit". 3. Confirm to link.	1. Take headset plug off from jack of "BU Test Fixture". 2. Press [TALK] key of "Hands establish link about one foot (away from "BU Test Fixture". 3. Confirm to link
1c	Check Antenna connection	1. Check ANT1(*2) and ANT2(*2) soldering. 2. Check ANT1(*2) and ANT2(*2) points are not shorted to GND.	1. Check Antenna(*3) on HS m soldering. 2. Check extendable Antenna cabinet.
2	24MHz confirmation	1. Set BU to [Test STANDBY] mode (*5) 2. Confirm X101 frequency within 24MHz ± 720Hz at TP_FREQ(*4) of RF Unit.	1. Set HS to [Test STANDBY] 2. Confirm X101 frequency wi 24MHz ± 720Hz at TP_FREQ(* Unit.
3	TX Pow_Low confirmation	1. Put wire to ANT1(*2) and GND(*2) 2. Connect this wire to Spectrum analyzer or Marconi. 3. Set BU to [Low Power] mode (*5) 4. Confirm TX power level within -5 ~ + 10dBm (*6)	1. Remove Antenna on HS ma Put wire to ANT(*3) and GND (2. Connect this wire to Spectr analyzer or Marconi. 3. Set HS to [Low Power] mod 4. Confirm TX power level wit 10dBm (*6)
4	TX Pow_High confirmation	5. Set BU to [High Power] mode (*5) 6. Confirm TX power level within +20± 4dBm (*6)	5. Set HS to [High Power] moc 6. Confirm TX power level wit 4dBm (*6)
5	Antenna Diversity confirmation	7. Set BU to [Test STANDBY] mode (*5) (Press [Locator key] once]) 8. Put wire to ANT2 (*2) and GND (*2) 9. Connect this wire to Spectrum analyzer or Marconi 10. Press [1] key 11. Set BU to [High Power] mode (*5) 12. Confirm TX power level within +20± 4dBm (*6)	
6	Receiver confirmation	Same as Item 1b.	Same as Item 1b.

(*1) BU; Base Unit, HS; Handset.
(*2) See Base Unit Reference Drawing.
(*3) See Handset Reference Drawing.
(*4) See RF Unit Reference Drawing.
(*5) See TEST MODE AND ADJUSTMENT.

(*6) See How to choose correct TX-Power specification table Table to get correlated value of TX-Power limit.

9. MEASUREMENT

9.1. Outline

As the request from some technicians, this supplement has been issued for the more detailed explanation to measure the TX -power.

9.2. Prepatation

9.2.1. Equipment

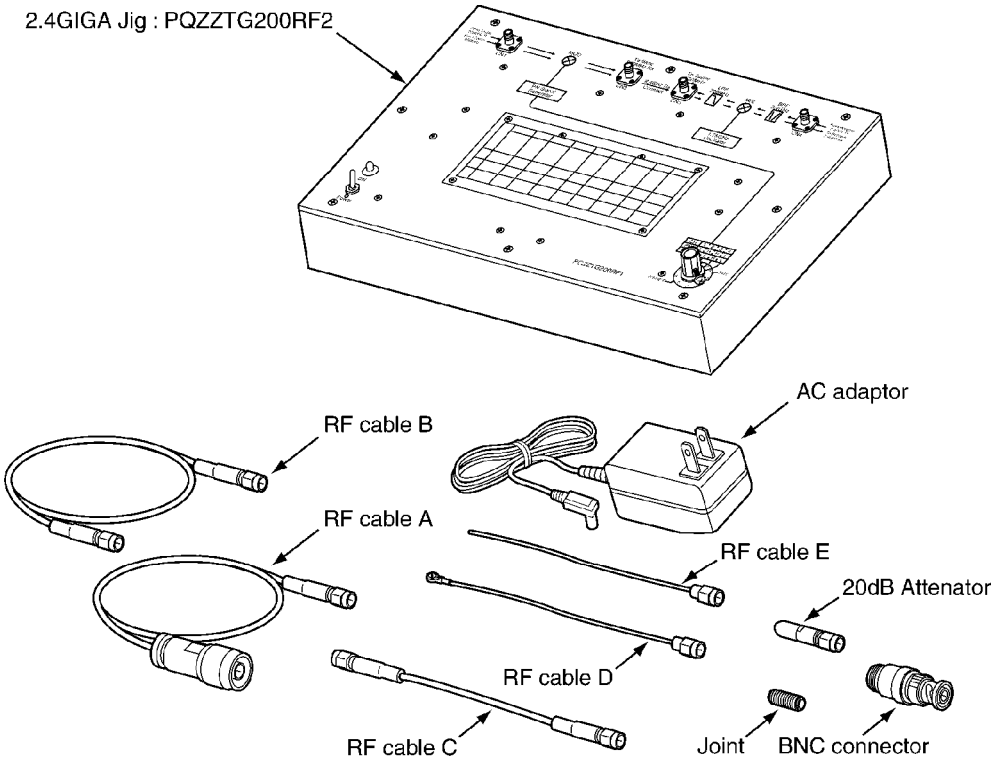
- Marconi Radio Tester *

- 2.4 GIGA Jig set (including cables, BNC and so on)

Note *:

You can use your own equipment also, just their requirement are as follows;
Radio Tester and Audio equipment
(RF: FM TRANSMITTER/ FM RECEIVER)
Frequency range: at least up to 1.0 GHz
Input level: more than 1 W
Both 2.4 GIGA Jigs, PQZZTG200RF1 and PQZZTG200RF2, are available to use.

9.2.2. Jigs full set



9.3. HOW TO ENTER THE TEST MODE

9.3.1. TX_Power Low (BU)

9.3.2. TX_Power High (BU)

9.3.3. Antenna Diversity (BU only)

9.3.4. TX_Power Low (HS)

9.3.5. TX_Power High (HS)

9.3.6. How to choose correct TX-Power specification table

These tables are compensation tables to specify correlated value to check Tx power. Follow this sequence to choose correlated Tx power value for your own test fixture.

1. Choose TX-Power specification Table depends on your test equipment.

Check model number of your test equipment and go to next step,

A. Marconi 2945 or Spectrum Analyzer up to 1GHz

If you have Marconi 2945 or spectrum analyzer that can measure up to 1GHz, select TX-Power specification Table 1 or TX-Power specification Table 2, depends on unit that you prefer.

1. If you prefer dBm in unit to μW, choose TX-Power

specification Table 1.
2. If you prefer μW in unit to dBm, choose TX-Power specification Table 2.

B. Marconi 2955
If you have Marconi 2955, select TX-Power specification Table 3 or TX-Power specification Table 4, depends on unit that you prefer.
3. If you prefer dBm in unit to μW, choose TX-Power specification Table 3.
4. If you prefer μW in unit to dBm, choose TX-Power specification Table 4.

C. Spectrum Analyzer over 1GHz to 2.5GHz
You don't need 2.4GHz GIGA JIG (PQZZTG200RF2) Skip step (2) and go to step (3).

2. Get correlated TX-Power specification value for your test equipment.
Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)
According to loss value ,select line for min and max limit value for TX-Power low and high mode.
Recommend you to mark selected line by highlight marker for further checking.
(ex. 1)
[2945]
1. Model number of Marconi test equipment is 2945 or Spectrum analyzer can operate up to 1GHz.
2. Loss value is 15.8dB between CN3 and CN4.
Your Tx-power specification value are

	(dBm)	(μ
TX Power Low :	-20.8dBm ~ -5.8dBm	8.3 ~ 263 μW
TX POWER High:	-19.8dBm ~ -11.8dBm	10.5 ~ 66.1 μW
	based on TX-Power specification Table 1	based on TX-Power specification Table

(You can use dBm value or μW unit value what you like.)
To convert μW value to dBm, press [dBm] button on Marconi when measuring.

(ex. 2)
[2955]
1. Model number of Marconi test equipment is 2955B
2. Loss value is 16.1dB between CN3 and CN4.
Your Tx-power specification value are

	(dBm)	(μ
TX Power Low :	-22.3dBm ~ -7.3dBm	5.9 ~ 186.2 μ W
TX POWER High:	-21.3dBm ~ -13.3dBm	7.4 ~ 46.8 μ W
	based on TX-Power specification Table 3	based on TX-Power specification Table

3. If you have excellent spectrum analyzer can operate up to 2.5 GHz, connect Spectrum analyzer input to RF unit ANT pads directly.
Your Tx-power specification value are

	(dBm)
TX Power Low :	-5dBm ~ -10dBm
TX POWER High:	-16dBm ~ 24dBm

9.3.6.1. TX-Power specification Table 1

For Marconi 2945 or Spectrum Analyzer (up to 1GHz). Unit in dBm. [2945] [dBm]

Low power limit (dBm)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
16.5	-21.5 ~ -6.5
16.6	-21.6 ~ -6.6
16.7	-21.7 ~ -6.7
16.8	-21.8 ~ -6.8
16.9	-21.9 ~ -6.9
17.0	-22.0 ~ -7.0
17.1	-22.1 ~ -7.1
17.2	-22.2 ~ -7.2
17.3	-22.3 ~ -7.3
17.4	-22.4 ~ -7.4
17.5	-22.5 ~ -7.5
17.6	-22.6 ~ -7.6
17.7	-22.7 ~ -7.7
17.8	-22.8 ~ -7.8
17.9	-22.9 ~ -7.9
18.0	-23.0 ~ -8.0
18.1	-23.1 ~ -8.1
18.2	-23.2 ~ -8.2
18.3	-23.3 ~ -8.3
18.4	-23.4 ~ -8.4
18.5	-23.5 ~ -8.5
18.6	-23.6 ~ -8.6
18.7	-23.7 ~ -8.7
18.8	-23.8 ~ -8.8
18.9	-23.9 ~ -8.9
19.0	-24.0 ~ -9.0
19.1	-24.1 ~ -9.1
19.2	-24.2 ~ -9.2
19.3	-24.3 ~ -9.3
19.4	-24.4 ~ -9.4
19.5	-24.5 ~ -9.5
19.6	-24.6 ~ -9.6
19.7	-24.7 ~ -9.7
19.8	-24.8 ~ -9.8
19.9	-24.9 ~ -9.9
20.0	-25.0 ~ -10.0
20.1	-25.1 ~ -10.1
20.2	-25.2 ~ -10.2
20.3	-25.3 ~ -10.3
20.4	-25.4 ~ -10.4
20.5	-25.5 ~ -10.5
20.6	-25.6 ~ -10.6
20.7	-25.7 ~ -10.7

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
20.8	-25.8 ~ -10.8
20.9	-25.9 ~ -10.9
21.0	-26.0 ~ -11.0

High power limit (dBm)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	-19.0 ~ -11.0
15.1	-19.1 ~ -11.1
15.2	-19.2 ~ -11.2
15.3	-19.3 ~ -11.3
15.4	-19.4 ~ -11.4
15.5	-19.5 ~ -11.5
15.6	-19.6 ~ -11.6
15.7	-19.7 ~ -11.7
15.8	-19.8 ~ -11.8
15.9	-19.9 ~ -11.9
16.0	-20.0 ~ -12.0
16.1	-20.1 ~ -12.1
16.2	-20.2 ~ -12.2
16.3	-20.3 ~ -12.3
16.4	-20.4 ~ -12.4
16.5	-20.5 ~ -12.5
16.6	-20.6 ~ -12.6
16.7	-20.7 ~ -12.7
16.8	-20.8 ~ -12.8
16.9	-20.9 ~ -12.9
17.0	-21.0 ~ -13.0
17.1	-21.1 ~ -13.1
17.2	-21.2 ~ -13.2
17.3	-21.3 ~ -13.3
17.4	-21.4 ~ -13.4
17.5	-21.5 ~ -13.5
17.6	-21.6 ~ -13.6
17.7	-21.7 ~ -13.7
17.8	-21.8 ~ -13.8
17.9	-21.9 ~ -13.9
18.0	-22.0 ~ -14.0
18.1	-22.1 ~ -14.1
18.2	-22.2 ~ -14.2

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.3	-22.3 ~ -14.3
18.4	-22.4 ~ -14.4
18.5	-22.5 ~ -14.5
18.6	-22.6 ~ -14.6
18.7	-22.7 ~ -14.7
18.8	-22.8 ~ -14.8
18.9	-22.9 ~ -14.9
19.0	-23.0 ~ -15.0
19.1	-23.1 ~ -15.1
19.2	-23.2 ~ -15.2
19.3	-23.3 ~ -15.3
19.4	-23.4 ~ -15.4
19.5	-23.5 ~ -15.5
19.6	-23.6 ~ -15.6
19.7	-23.7 ~ -15.7
19.8	-23.8 ~ -15.8
19.9	-23.9 ~ -15.9
20.0	-24.0 ~ -16.0
20.1	-24.1 ~ -16.1
20.2	-24.2 ~ -16.2
20.3	-24.3 ~ -16.3
20.4	-24.4 ~ -16.4
20.5	-24.5 ~ -16.5
20.6	-24.6 ~ -16.6
20.7	-24.7 ~ -16.7
20.8	-24.8 ~ -16.8
20.9	-24.9 ~ -16.9
21.0	-25.0 ~ -17.0

9.3.6.2. TX-Power specification Table 2

For Marconi 2945 or Spectrum Analyzer (up to 1GHz). Unit in µ W. [2945] [µ W]

Low power limit (µ W)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	10.0 ~ 316.2
15.1	9.8 ~ 309.0
15.2	9.5 ~ 302.0
15.3	9.3 ~ 295.1
15.4	9.1 ~ 288.4
15.5	8.9 ~ 281.8
15.6	8.7 ~ 275.4
15.7	8.5 ~ 269.2
15.8	8.3 ~ 263.0
15.9	8.1 ~ 257.0
16.0	7.9 ~ 251.2
16.1	7.8 ~ 245.5
16.2	7.6 ~ 239.9
16.3	7.4 ~ 234.4
16.4	7.2 ~ 229.1
16.5	7.1 ~ 223.9
16.6	6.9 ~ 218.8
16.7	6.8 ~ 213.8
16.8	6.6 ~ 208.9
16.9	6.5 ~ 204.2
17.0	6.3 ~ 199.5
17.1	6.2 ~ 195.0
17.2	6.0 ~ 190.5
17.3	5.9 ~ 186.2
17.4	5.8 ~ 182.0
17.5	5.6 ~ 177.8
17.6	5.5 ~ 173.8
17.7	5.4 ~ 169.8
17.8	5.2 ~ 166.0
17.9	5.1 ~ 162.2
18.0	5.0 ~ 158.5
18.1	4.9 ~ 154.9
18.2	4.8 ~ 151.4
18.3	4.7 ~ 147.9
18.4	4.6 ~ 144.5

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.5	4.5 ~ 141.3
18.6	4.4 ~ 138.0
18.7	4.3 ~ 134.9
18.8	4.2 ~ 131.8
18.9	4.1 ~ 128.8
19.0	4.0 ~ 125.9
19.1	3.9 ~ 123.0
19.2	3.8 ~ 120.2
19.3	3.7 ~ 117.5
19.4	3.6 ~ 114.8
19.5	3.5 ~ 112.2
19.6	3.5 ~ 109.6
19.7	3.4 ~ 107.2
19.8	3.3 ~ 104.7
19.9	3.2 ~ 102.3
20.0	3.2 ~ 100.0
20.1	3.1 ~ 97.7
20.2	3.0 ~ 95.5
20.3	3.0 ~ 93.3
20.4	2.9 ~ 91.2
20.5	2.8 ~ 89.1
20.6	2.8 ~ 87.1
20.7	2.7 ~ 85.1
20.8	2.6 ~ 83.2
20.9	2.6 ~ 81.3
21.0	2.5 ~ 79.4

High power limit (μ W)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	12.6 ~ 79.4
15.1	12.3 ~ 77.6
15.2	12.0 ~ 75.9
15.3	11.7 ~ 74.1
15.4	11.5 ~ 72.4
15.5	11.2 ~ 70.8
15.6	11.0 ~ 69.2
15.7	10.7 ~ 67.6
15.8	10.5 ~ 66.1
15.9	10.2 ~ 64.6
16.0	10.0 ~ 63.1
16.1	9.8 ~ 61.7
16.2	9.5 ~ 60.3
16.3	9.3 ~ 58.9
16.4	9.1 ~ 57.5
16.5	8.9 ~ 56.2
16.6	8.7 ~ 55.0
16.7	8.5 ~ 53.7
16.8	8.3 ~ 52.5
16.9	8.1 ~ 51.3
17.0	7.9 ~ 50.1
17.1	7.8 ~ 49.0
17.2	7.6 ~ 47.9
17.3	7.4 ~ 46.8
17.4	7.2 ~ 45.7
17.5	7.1 ~ 44.7
17.6	6.9 ~ 43.7
17.7	6.8 ~ 42.7
17.8	6.6 ~ 41.7
17.9	6.5 ~ 40.7
18.0	6.3 ~ 39.8
18.1	6.2 ~ 38.9
18.2	6.0 ~ 38.0
18.3	5.9 ~ 37.2
18.4	5.8 ~ 36.3
18.5	5.6 ~ 35.5
18.6	5.5 ~ 34.7
18.7	5.4 ~ 33.9
18.8	5.2 ~ 33.1

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.9	5.1 ~ 32.4
19.0	5.0 ~ 31.6
19.1	4.9 ~ 30.9
19.2	4.8 ~ 30.2
19.3	4.7 ~ 29.5
19.4	4.6 ~ 28.8
19.5	4.5 ~ 28.2
19.6	4.4 ~ 27.5
19.7	4.3 ~ 26.9
19.8	4.2 ~ 26.3
19.9	4.1 ~ 25.7
20.0	4.0 ~ 25.1
20.1	3.9 ~ 24.5
20.2	3.8 ~ 24.0
20.3	3.7 ~ 23.4
20.4	3.6 ~ 22.9
20.5	3.5 ~ 22.4
20.6	3.5 ~ 21.9
20.7	3.4 ~ 21.4
20.8	3.3 ~ 20.9
20.9	3.2 ~ 20.4
21.0	3.2 ~ 20.0

9.3.6.3. TX-Power specification Table 3

For Marconi 2955. Unit in dBm. [2955] [dBm]

Low power limit (dBm)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max	Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	-21.2 ~ -6.2		
15.1	-21.3 ~ -6.3		
15.2	-21.4 ~ -6.4		
15.3	-21.5 ~ -6.5		
15.4	-21.6 ~ -6.6		
15.5	-21.7 ~ -6.7		
15.6	-21.8 ~ -6.8		
15.7	-21.9 ~ -6.9		
15.8	-22.0 ~ -7.0		
15.9	-22.1 ~ -7.1	18.5	-24.7 ~ -9.7
16.0	-22.2 ~ -7.2	18.6	-24.8 ~ -9.8
16.1	-22.3 ~ -7.3	18.7	-24.9 ~ -9.9
16.2	-22.4 ~ -7.4	18.8	-25.0 ~ -10.0
16.3	-22.5 ~ -7.5	18.9	-25.1 ~ -10.1
16.4	-22.6 ~ -7.6	19.0	-25.2 ~ -10.2
16.5	-22.7 ~ -7.7	19.1	-25.3 ~ -10.3
16.6	-22.8 ~ -7.8	19.2	-25.4 ~ -10.4
16.7	-22.9 ~ -7.9	19.3	-25.5 ~ -10.5
16.8	-23.0 ~ -8.0	19.4	-25.6 ~ -10.6
16.9	-23.1 ~ -8.1	19.5	-25.7 ~ -10.7
17.0	-23.2 ~ -8.2	19.6	-25.8 ~ -10.8
17.1	-23.3 ~ -8.3	19.7	-25.9 ~ -10.9
17.2	-23.4 ~ -8.4	19.8	-26.0 ~ -11.0
17.3	-23.5 ~ -8.5	19.9	-26.1 ~ -11.1
17.4	-23.6 ~ -8.6	20.0	-26.2 ~ -11.2
17.5	-23.7 ~ -8.7	20.1	-26.3 ~ -11.3
17.6	-23.8 ~ -8.8	20.2	-26.4 ~ -11.4
17.7	-23.9 ~ -8.9	20.3	-26.5 ~ -11.5
17.8	-24.0 ~ -9.0	20.4	-26.6 ~ -11.6
17.9	-24.1 ~ -9.1	20.5	-26.7 ~ -11.7
18.0	-24.2 ~ -9.2	20.6	-26.8 ~ -11.8
18.1	-24.3 ~ -9.3	20.7	-26.9 ~ -11.9
18.2	-24.4 ~ -9.4	20.8	-27.0 ~ -12.0
18.3	-24.5 ~ -9.5	20.9	-27.1 ~ -12.1
18.4	-24.6 ~ -9.6	21.0	-27.2 ~ -12.2

High power limit (dBm)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	-20.2 ~ -12.2
15.1	-20.3 ~ -12.3
15.2	-20.4 ~ -12.4
15.3	-20.5 ~ -12.5
15.4	-20.6 ~ -12.6
15.5	-20.7 ~ -12.7
15.6	-20.8 ~ -12.8
15.7	-20.9 ~ -12.9
15.8	-21.0 ~ -13.0
15.9	-21.1 ~ -13.1
16.0	-21.2 ~ -13.2
16.1	-21.3 ~ -13.3
16.2	-21.4 ~ -13.4
16.3	-21.5 ~ -13.5
16.4	-21.6 ~ -13.6
16.5	-21.7 ~ -13.7
16.6	-21.8 ~ -13.8
16.7	-21.9 ~ -13.9
16.8	-22.0 ~ -14.0
16.9	-22.1 ~ -14.1
17.0	-22.2 ~ -14.2
17.1	-22.3 ~ -14.3
17.2	-22.4 ~ -14.4
17.3	-22.5 ~ -14.5
17.4	-22.6 ~ -14.6
17.5	-22.7 ~ -14.7
17.6	-22.8 ~ -14.8
17.7	-22.9 ~ -14.9
17.8	-23.0 ~ -15.0
17.9	-23.1 ~ -15.1
18.0	-23.2 ~ -15.2
18.1	-23.3 ~ -15.3
18.2	-23.4 ~ -15.4
18.3	-23.5 ~ -15.5
18.4	-23.6 ~ -15.6
18.5	-23.7 ~ -15.7
18.6	-23.8 ~ -15.8
18.7	-23.9 ~ -15.9
18.8	-24.0 ~ -16.0

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.9	-24.1 ~ -16.1
19.0	-24.2 ~ -16.2
19.1	-24.3 ~ -16.3
19.2	-24.4 ~ -16.4
19.3	-24.5 ~ -16.5
19.4	-24.6 ~ -16.6
19.5	-24.7 ~ -16.7
19.6	-24.8 ~ -16.8
19.7	-24.9 ~ -16.9
19.8	-25.0 ~ -17.0
19.9	-25.1 ~ -17.1
20.0	-25.2 ~ -17.2
20.1	-25.3 ~ -17.3
20.2	-25.4 ~ -17.4
20.3	-25.5 ~ -17.5
20.4	-25.6 ~ -17.6
20.5	-25.7 ~ -17.7
20.6	-25.8 ~ -17.8
20.7	-25.9 ~ -17.9
20.8	-26.0 ~ -18.0
20.9	-26.1 ~ -18.1
21.0	-26.2 ~ -18.2

9.3.6.4. TX-Power specification Table 4

For Marconi 2955. Unit in µ W. [2955] [µ]

Low power limit (µ W)

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	7.6 ~ 239.9
15.1	7.4 ~ 234.4
15.2	7.2 ~ 229.1
15.3	7.1 ~ 223.9
15.4	6.9 ~ 218.8
15.5	6.8 ~ 213.8
15.6	6.6 ~ 208.9
15.7	6.5 ~ 204.2
15.8	6.3 ~ 199.5
15.9	6.2 ~ 195.0
16.0	6.0 ~ 190.5
16.1	5.9 ~ 186.2
16.2	5.8 ~ 182.0
16.3	5.6 ~ 177.8
16.4	5.5 ~ 173.8
16.5	5.4 ~ 169.8
16.6	5.2 ~ 166.0
16.7	5.1 ~ 162.2
16.8	5.0 ~ 158.5
16.9	4.9 ~ 154.9
17.0	4.8 ~ 151.4
17.1	4.7 ~ 147.9
17.2	4.6 ~ 144.5
17.3	4.5 ~ 141.3
17.4	4.4 ~ 138.0
17.5	4.3 ~ 134.9
17.6	4.2 ~ 131.8
17.7	4.1 ~ 128.8
17.8	4.0 ~ 125.9
17.9	3.9 ~ 123.0
18.0	3.8 ~ 120.2
18.1	3.7 ~ 117.5
18.2	3.6 ~ 114.8
18.3	3.5 ~ 112.2
18.4	3.5 ~ 109.6

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.5	3.4 ~ 107.2
18.6	3.3 ~ 104.7
18.7	3.2 ~ 102.3
18.8	3.2 ~ 100.0
18.9	3.1 ~ 97.7
19.0	3.0 ~ 95.5
19.1	3.0 ~ 93.3
19.2	2.9 ~ 91.2
19.3	2.8 ~ 89.1
19.4	2.8 ~ 87.1
19.5	2.7 ~ 85.1
19.6	2.6 ~ 83.2
19.7	2.6 ~ 81.3
19.8	2.5 ~ 79.4
19.9	2.5 ~ 77.6
20.0	2.4 ~ 75.9
20.1	2.3 ~ 74.1
20.2	2.3 ~ 72.4
20.3	2.2 ~ 70.8
20.4	2.2 ~ 69.2
20.5	2.1 ~ 67.6
20.6	2.1 ~ 66.1
20.7	2.0 ~ 64.6
20.8	2.0 ~ 63.1
20.9	1.9 ~ 61.7
21.0	1.9 ~ 60.3

High power limit (μ W)

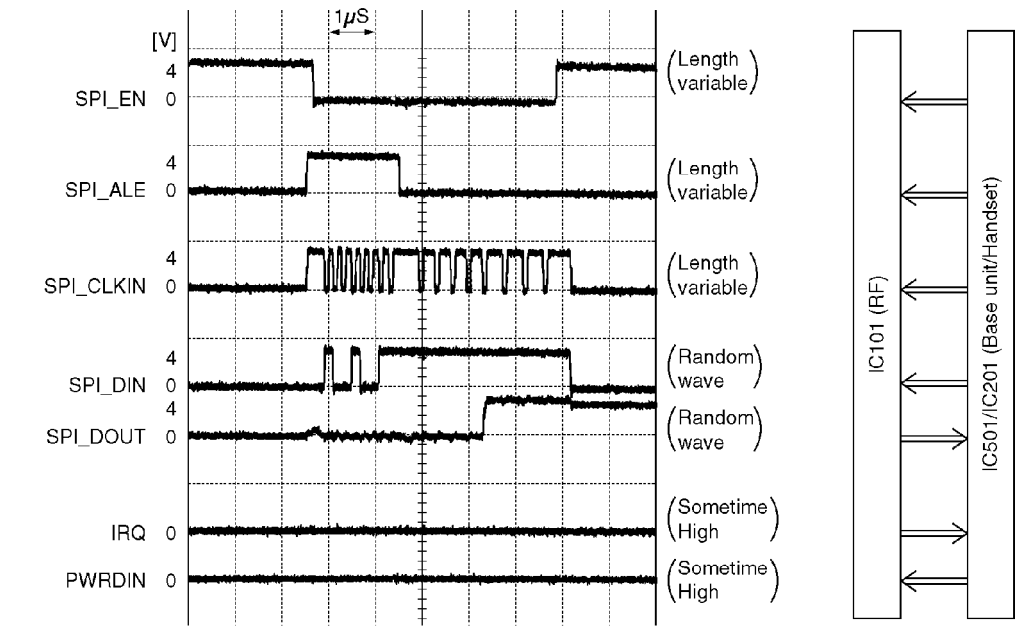
Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
15.0	9.5 ~ 60.3
15.1	9.3 ~ 58.9
15.2	9.1 ~ 57.5
15.3	8.9 ~ 56.2
15.4	8.7 ~ 55.0
15.5	8.5 ~ 53.7
15.6	8.3 ~ 52.5
15.7	8.1 ~ 51.3
15.8	7.9 ~ 50.1
15.9	7.8 ~ 49.0
16.0	7.6 ~ 47.9
16.1	7.4 ~ 46.8
16.2	7.2 ~ 45.7
16.3	7.1 ~ 44.7
16.4	6.9 ~ 43.7
16.5	6.8 ~ 42.7
16.6	6.6 ~ 41.7
16.7	6.5 ~ 40.7
16.8	6.3 ~ 39.8
16.9	6.2 ~ 38.9
17.0	6.0 ~ 38.0
17.1	5.9 ~ 37.2
17.2	5.8 ~ 36.3
17.3	5.6 ~ 35.5
17.4	5.5 ~ 34.7
17.5	5.4 ~ 33.9
17.6	5.2 ~ 33.1
17.7	5.1 ~ 32.4
17.8	5.0 ~ 31.6
17.9	4.9 ~ 30.9
18.0	4.8 ~ 30.2
18.1	4.7 ~ 29.5
18.2	4.6 ~ 28.8
18.3	4.5 ~ 28.2
18.4	4.4 ~ 27.5
18.5	4.3 ~ 26.9
18.6	4.2 ~ 26.3
18.7	4.1 ~ 25.7
18.8	4.0 ~ 25.1

Loss (CN4-CN3) (dB)	TX-Power (Low) Limit min max
18.9	3.9 ~ 24.5
19.0	3.8 ~ 24.0
19.1	3.7 ~ 23.4
19.2	3.6 ~ 22.9
19.3	3.5 ~ 22.4
19.4	3.5 ~ 21.9
19.5	3.4 ~ 21.4
19.6	3.3 ~ 20.9
19.7	3.2 ~ 20.4
19.8	3.2 ~ 20.0
19.9	3.1 ~ 19.5
20.0	3.0 ~ 19.1
20.1	3.0 ~ 18.6
20.2	2.9 ~ 18.2
20.3	2.8 ~ 17.8
20.4	2.8 ~ 17.4
20.5	2.7 ~ 17.0
20.6	2.6 ~ 16.6
20.7	2.6 ~ 16.2
20.8	2.5 ~ 15.8
20.9	2.5 ~ 15.5
21.0	2.4 ~ 15.1

9.4. RF-DSP Interface Signal Wave Form

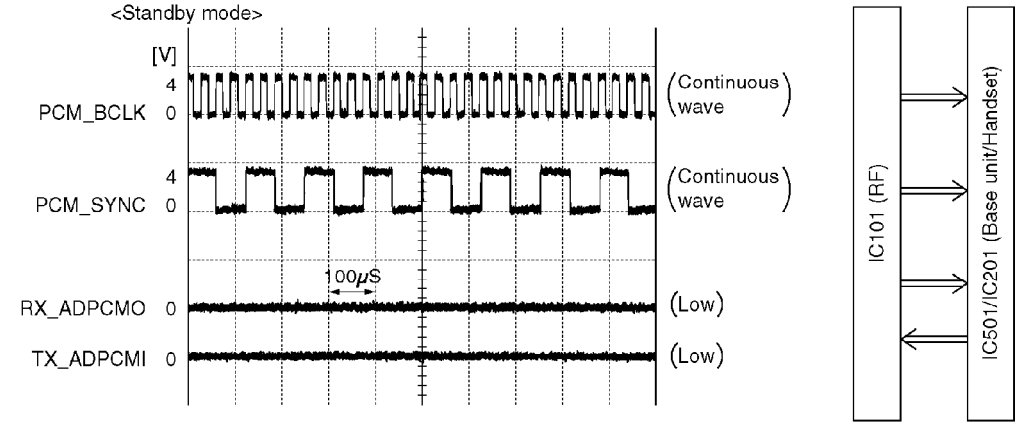
(1) Serial control line

<Standby mode>

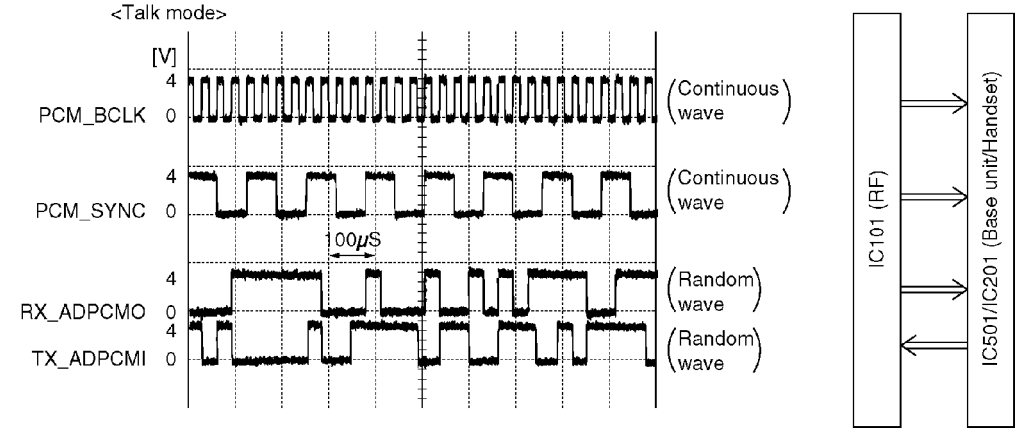


(2) ADPCM (Digital sound) line

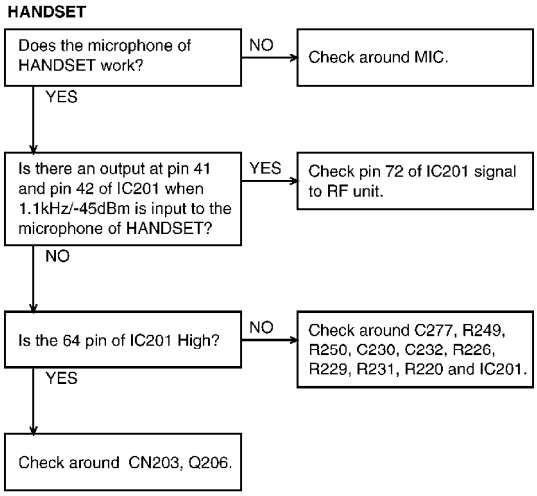
<Standby mode>

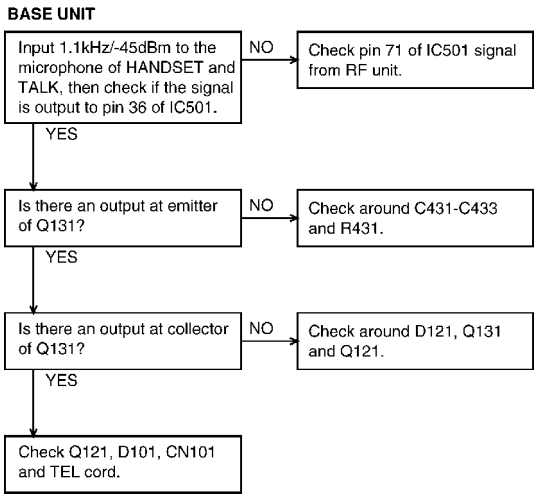


<Talk mode>



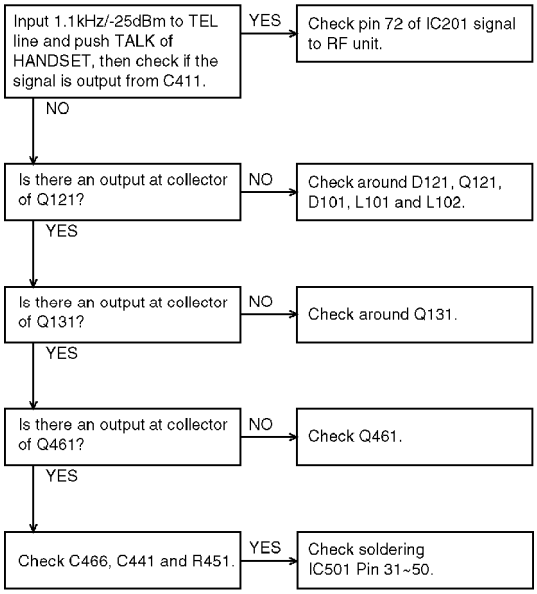
9.5. Check Handset Voice Transmission


HANDSET
Does the microphone of HANDSET work?
NO
Check around MIC.
YES
Is there an output at pin 41 and pin 42 of IC201 when 1.1kHz/-45dBm is input to the microphone of HANDSET?
YES
Check pin 72 of IC201 signal to RF unit.
NO
Is the 64 pin of IC201 High?
NO
Check around C277, R249, R250, C230, C232, R226, R229, R231, R220 and IC201.
YES
Check around CN203, Q206.

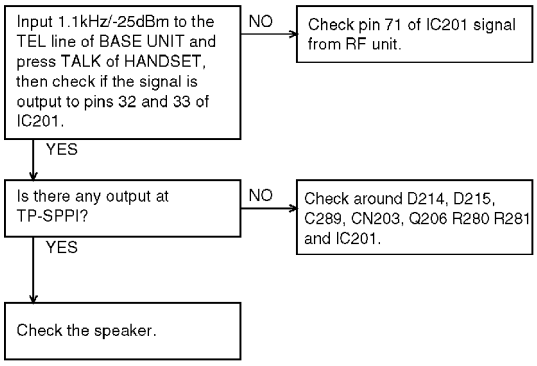

BASE UNIT
Input 1.1kHz/-45dBm to the microphone of HANDSET and TALK, then check if the signal is output to pin 36 of IC501.
NO
Check pin 71 of IC501 signal from RF unit.
YES
Is there an output at emitter of Q131?
NO
Check around C431-C433 and R431.
YES
Is there an output at collector of Q131?
NO
Check around D121, Q131 and Q121.
YES
Check Q121, D101, CN101 and TEL cord.

9.6. Check Handset Voice Reception

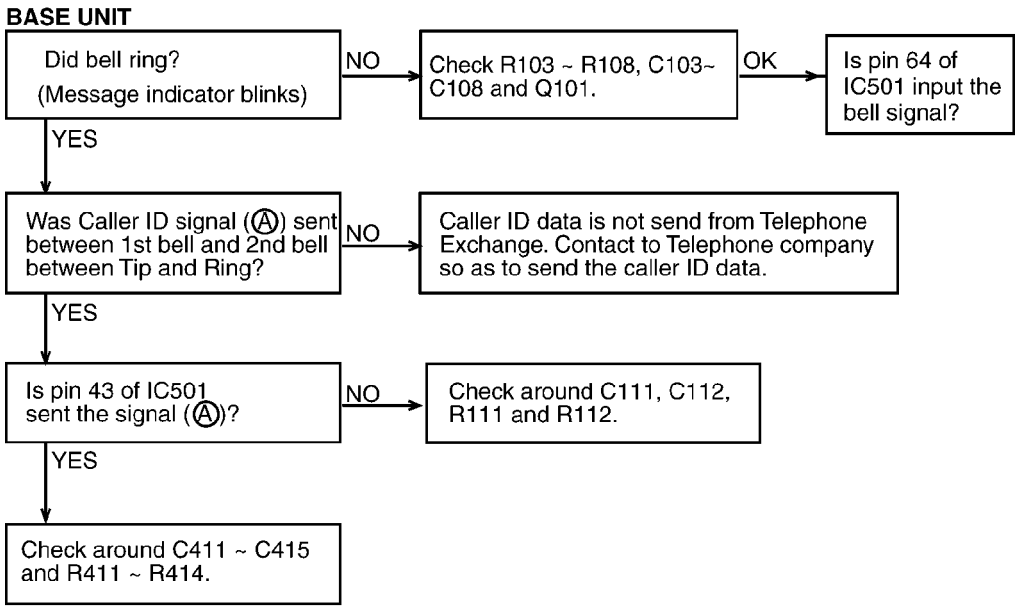
BASE UNIT

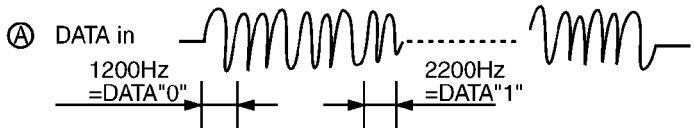

Input 1.1kHz/-25dBm to TEL line and push TALK of HANDSET, then check if the signal is output from C411.
YES
Check pin 72 of IC201 signal to RF unit.
NO
Is there an output at collector of Q121?
NO
Check around D121, Q121, D101, L101 and L102.
YES
Is there an output at collector of Q131?
NO
Check around Q131.
YES
Is there an output at collector of Q461?
NO
Check Q461.
YES
Check C466, C441 and R451.
YES
Check soldering IC501 Pin 31~50.

HANDSET


Input 1.1kHz/-25dBm to the TEL line of BASE UNIT and press TALK of HANDSET, then check if the signal is output to pins 32 and 33 of IC201.
NO
Check pin 71 of IC201 signal from RF unit.
YES
Is there any output at TP-SPPI?
NO
Check around D214, D215, C289, CN203, Q206 R280 R281 and IC201.
YES
Check the speaker.

9.7. Check Call ID


BASE UNIT
Did bell ring?
(Message indicator blinks)
NO
Check R103 ~ R108, C103~ C108 and Q101.
OK
Is pin 64 of IC501 input the bell signal?
YES
Was Caller ID signal (Ⓐ) sent between 1st bell and 2nd bell between Tip and Ring?
NO
Caller ID data is not send from Telephone Exchange. Contact to Telephone company so as to send the caller ID data.
YES
Is pin 43 of IC501 sent the signal (Ⓐ)?
NO
Check around C111, C112, R111 and R112.
YES
Check around C411 ~ C415 and R411 ~ R414.



9.8. Check TTS (Text to Speech) Circuit

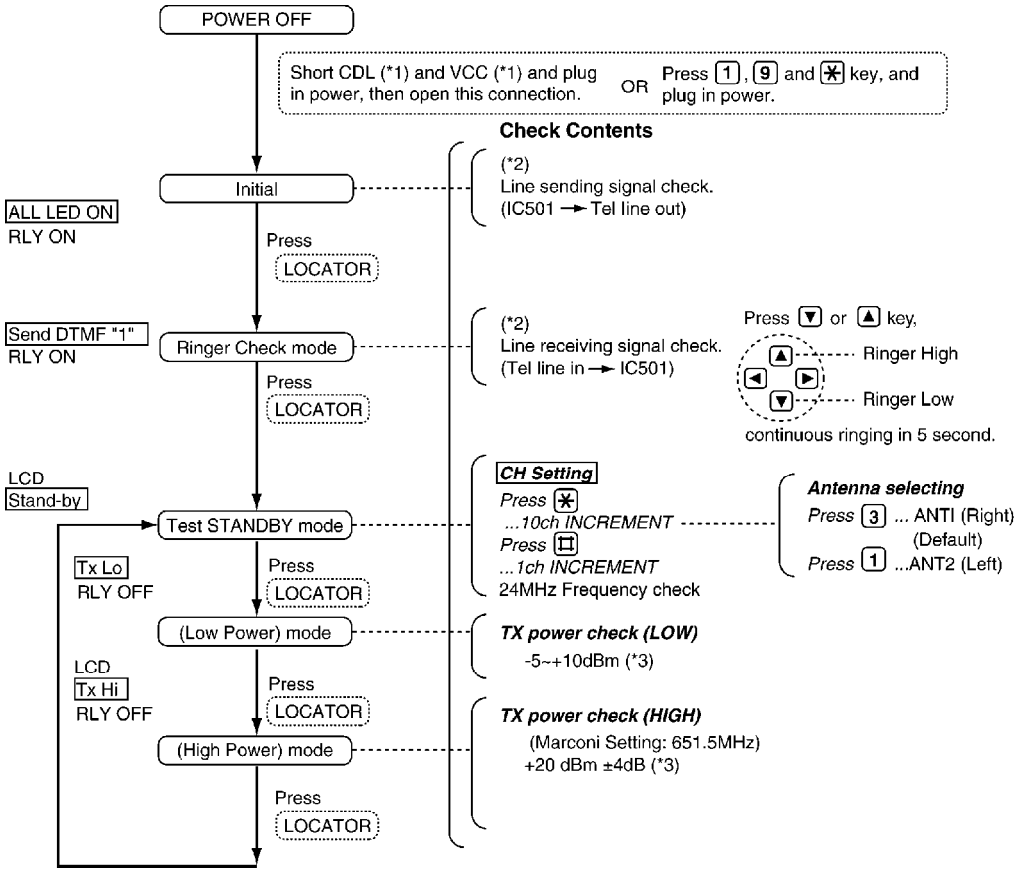
- Check a flexible cable connection of the CN801 and CN803.
- Check each power voltage of the IC801, IC802 and IC803.
- Check the IC804 input and output voltage (E.g. Input voltage: 5.0V. Output voltage: 3.0V)
- Check 27 MHz oscillate at the 116 and 118 pin in the IC801.

Press key 4 after the TAM TEST MODE (Press “3”, “7” and “#” key while the base unit turns on.)

- Check the PWM wave at the 122 pin in the IC801.
- Check whether show about 900 Hz and about -24 dBm sine wave at the AOUT pin in the CN803.

10. TEST MODE AND ADJUSTMENT

10.1. Test Mode Flow Chart for Base Unit

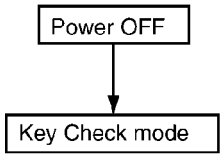


(*1) See Base Unit Reference Drawing.

(*2) Special check method for Base Unit individually.

(*3) See How to choose correct TX-Power specification table.

10.2. Key Check Mode

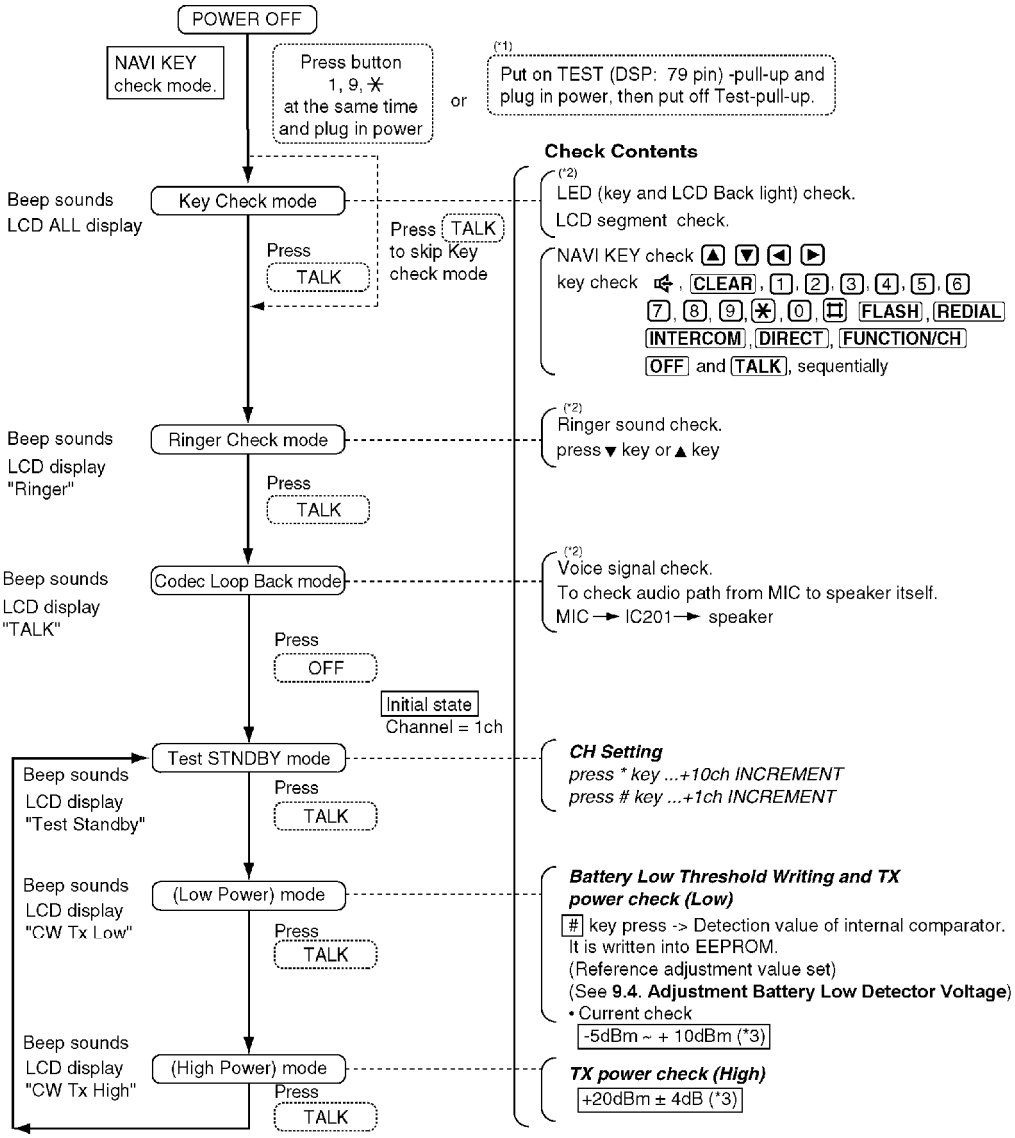


Pull up a TAM (*1) pin and Plug in power
or
Press 3,7 and # key ,simultaneously and plug in power

Press all key without "LOCATOR" and press "LOCATOR" at the end.
Then, long beep is rung. This means all keys are OK.
If not, three beep (pi pi pi) is rung. This means to mistake to press keys or some key is wrong.

(*1) See Base Unit Reference Drawing.

10.3. Test Mode Flow Chart for Handset



(*1) See Handset Reference Drawing.

(*2) Special check method for Handset individually.

(*3) See How to choose correct TX-Power specification table.

10.4. Adjustment Battery Low Detector Voltage

After replacing handset's DSP (IC201), Re-writing Battery Low voltage to EEPROM is required.
Following Test mode flow chart (Refer to Test Mode Flow Chart for Handset),
DC power supply and Battery connector are required in this adjustment.

1. Set 2.6V for DC power supply.

2. Place handset in test mode.

3. Press "TALK" key twice, "OFF" key once and "TALK" key again to TX-Low mode. (CW Tx Low is displayed on LCD)

4. Set 2.37V for DC power supply.

Note: Check voltage at battery connector, because some voltage drop is happened, using long or thin cable.

5. Press "#" key to write voltage value in EEPROM.

6. Turn power off. Then this value is available.

10.5. Base Unit Reference Drawing

10.6. Handset Reference Drawing

10.7. Frequency Table

(TDD: time division duplex)

Channel	TX/RX Frequency (GHz)	Channel	TX/RX Frequency (GHz)
1	2.4015	13	2.4375
2	2.4045	14	2.4405
3	2.4075	15	2.4435
4	2.4105	16	2.4465
5	2.4135	17	2.4495
6	2.4165	18	2.4525
7	2.4195	19	2.4555
8	2.4225	20	2.4585
9	2.4255	21	2.4615
10	2.4285	22	2.4645
11	2.4315	23	2.4675
12	2.4345	24	2.4705

11. DESCRIPTION

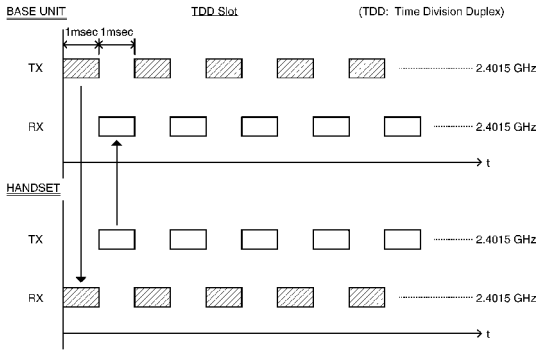
11.1. Frequency

The frequency range of 2.4015 GHz ~ 2.4705 GHz is used. Transmitting and receiving channel between base unit and handset is same frequency. Refer to the Frequency Table.

11.2. Time Division Duplex (TDD) operation

Transmission/reception between the base unit and handset is performed by time-sharing as shown in Fig. 7. 1 slot time of transmission and reception is 1mS.Same frequency is used in transmitting and receiving. The figure shows an example; the frequency of 1ch is used in transmitting between the base unit and handset.

Fig. 7

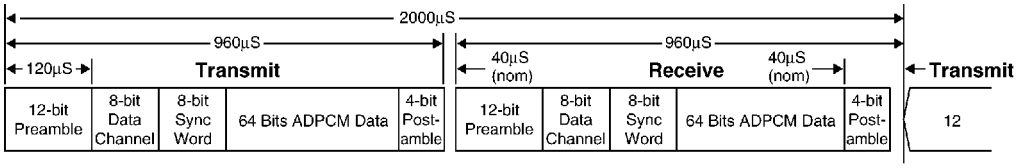


11.2.1. TDD Frame Format

The TDD frame is 2mS in length, and is composed of two symmetrical 960 μS TX and RX subframes. Each subframe contains 96 bits of 10 μS duration, with 40 μS guard times between both TX and RX subframes.
Each subframe consists of the following five fields:

- **A 12-bit Preamble field**
- **An 8-bit Data Channel field**
- **An 8-bit Sync Word**
- **A 64-bit ADPCM Payload**
- **A 4-bit Post-amble**

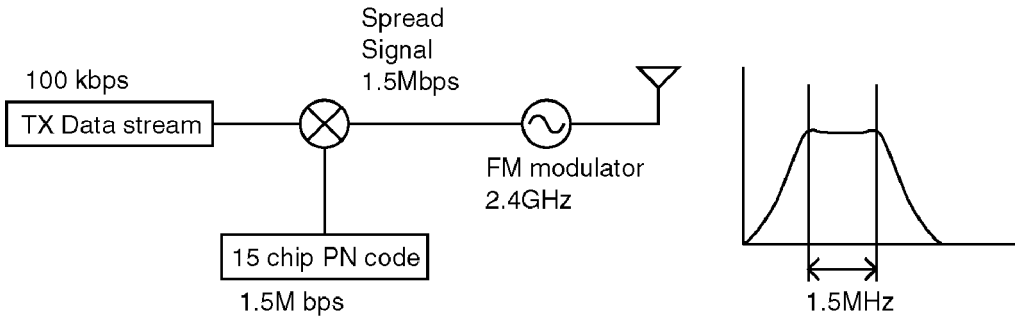
Both the 8-bit sync word and 8-bit data channel are programmable via the DSP interface. In addition, the 64-bit payload can be filled either with ADPCM voice data, or can be used by the host DSP as a fast data channel between base and handset.



11.3. Spread Spectrum

Transmission and reception are operated using the spread spectrum method.
DSS (Digital Spread Spectrum)
Mixing the original signal with the pseudo random noise code (PN code) works the spread spectrum. In this system PN code is 15 chip. Although the band width is spread fifteen times, the power level per channel becomes lower.

Fig. 8



11.4. Signal Flowchart in the Whole System

Reception

CN101 of the base unit is connected to the TEL line, and the signal is input through the bridge diode D101. While talking the relay (Q121) is turned ON and amplified at the amplifiers Q461, then led to DSP (IC501). DSP generates ADPCM signal. The ADPCM signal is input to RFIC (IC101) of RF UNIT, and is mixed with pseudo random noise code (PN code) to spread the spectrum. RFIC outputs FSK modulated RF signal. The RF signal is passed through the balun (T101) and filter (L107) to the T/R switch (IC109). And the RF signal amplifies by the power amplifier (IC105) and fed into T/R switch (IC110) and passes through filter (L106) to Diversity ANTENNA. As for the handset, RF signal from the antenna passes through filter (L106) and switch by T/R switch (IC110) to LNA (IC106). The RF signal is amplified by LNA (IC106) and switched by T/R switch (IC109) and input to RFIC passing through filter (L107) and the balun (T101) to perform the de-spread, then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal, then it is output to the speaker.

Transmission

The voice signal input from the microphone is led to DSP (IC201). The DSP generates ADPCM signal. As well as the reception, it is converted into the RF signal by RFIC (IC101). Passing through the balun (T101) and filter (L107), to the T/R switch (IC109). And the RF signal amplifies by the power amprifier (IC105) and fed into T/R switch (IC110) and passes through filter (L106) to ANTENNA. As for the base unit, RF signal from the Diversity antenna passes through filter (L106) and switch by T/R switch (IC110) to LNA (IC106). The RF signal is amplified by LNA (IC106) and switched by T/R switch (IC109) and is input to RFIC (IC101) passing through filter (L107) and the balum (T101) to perform the de-spread, then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal. The voice signal is amplified at the TX amplifier (Q131), then output to the TEL line (CN101) through the relay (Q121) and bridge (D101).

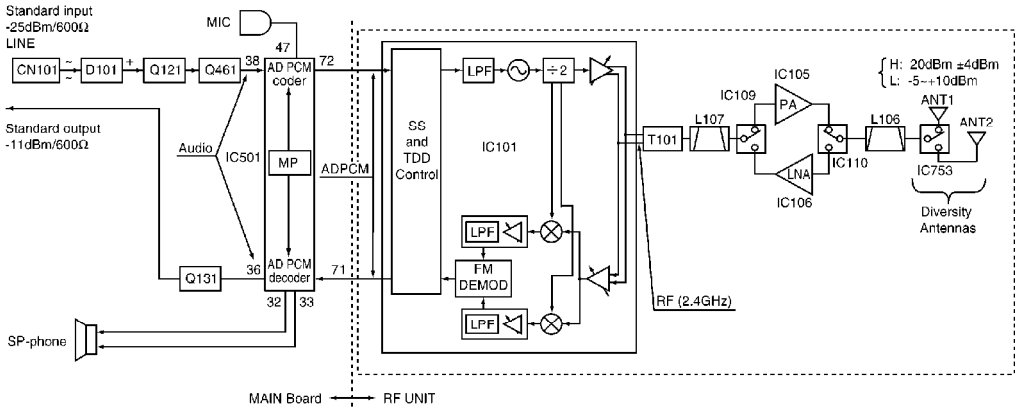


Fig. 9-1 BASE UNIT

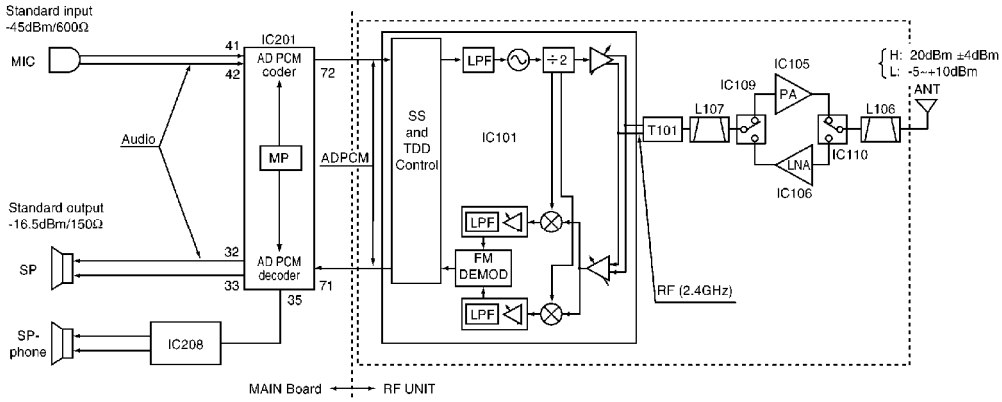
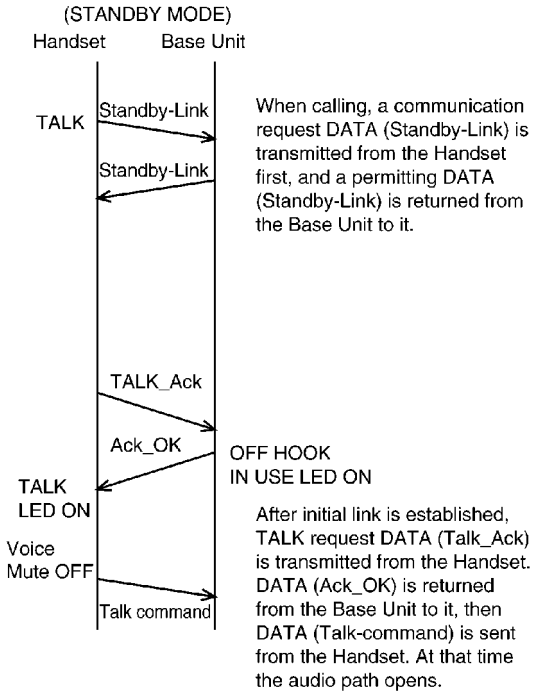


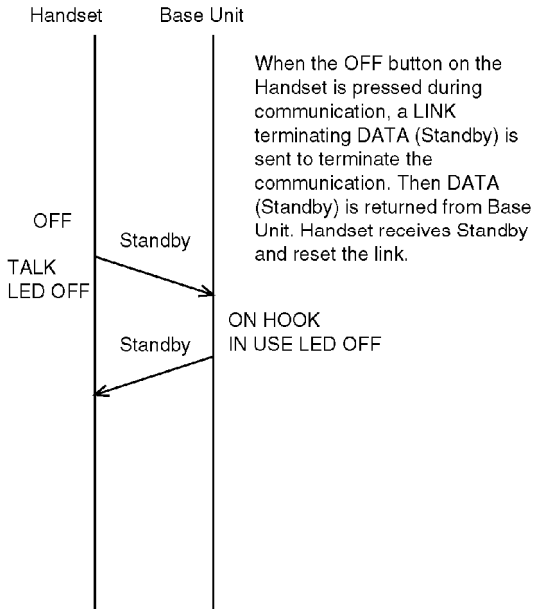
Fig. 9-2 HANDSET

11.5. EXPLANATION OF DSP DATA COMMUNICATION

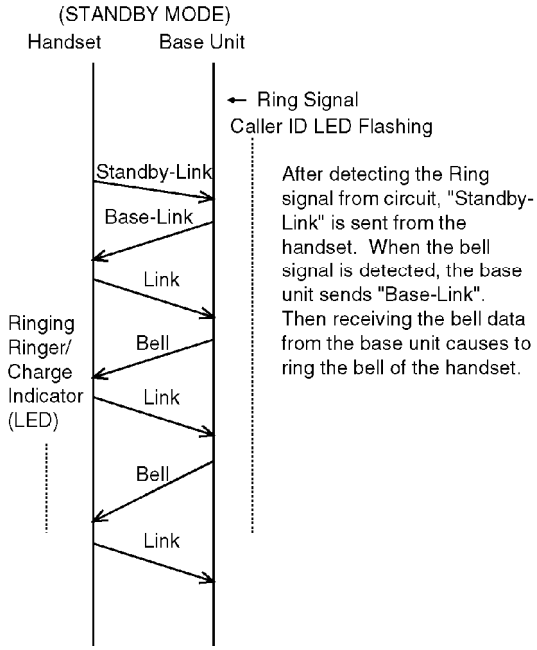
11.5.1. Calling


(STANDBY MODE)
Handset
Base Unit
TALK
Standby-Link
Standby-Link
When calling, a communication request DATA (Standby-Link) is transmitted from the Handset first, and a permitting DATA (Standby-Link) is returned from the Base Unit to it.
TALK_Ack
Ack_OK
OFF HOOK
IN USE LED ON
TALK
LED ON
Voice
Mute OFF
Talk command
After initial link is established, TALK request DATA (Talk_Ack) is transmitted from the Handset. DATA (Ack_OK) is returned from the Base Unit to it, then DATA (Talk-command) is sent from the Handset. At that time the audio path opens.

11.5.2. To Terminate Communication

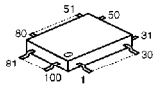
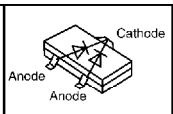
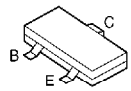
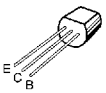
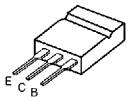
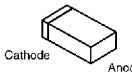
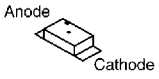
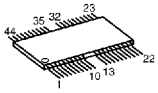
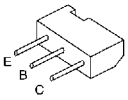
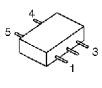
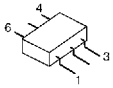
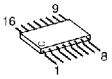
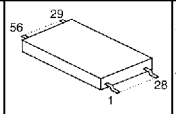
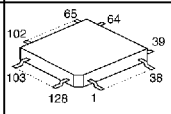

Handset
Base Unit
When the OFF button on the Handset is pressed during communication, a LINK terminating DATA (Standby) is sent to terminate the communication. Then DATA (Standby) is returned from Base Unit. Handset receives Standby and reset the link.
OFF
TALK
LED OFF
Standby
ON HOOK
IN USE LED OFF
Standby

11.5.3. Ringing

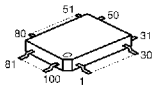
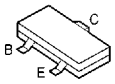
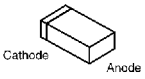
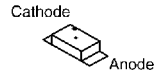
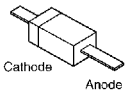


12. TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

12.1. Base Unit

PQVDRLZ2R0 PQVDRLZ20A	 PQVI16569AEA	 MA153	PQVIXCF3002P 2SD1758Q	 PQVTDTA143EU PQVTDTC143E PQVTDTC114EU, UN5213 2SD1819A, 2SD601A	PQVIXCF4502P PQVITC7W74U
 2SC2120, PQVT2N6517CA, 2SA1625	 2SD2136	PQVDS1ZB60F1	 PQVDHRU0302A, LNJ211R8ARU MA8047, MA8043, MA8033, MA111, MA8051, MA8036H, MA8220		PQVTXP132A11
 PQVDFA1105W PQVDHPY1105W PQVDSS24	 PQWI2G2680NH PQVILC324265	 2SD1994A	PQVIPS3432UT	2SD1664Q	PQVINJM2360M
 PQVITC7S08FU	 PQVISPM3204T	 PQVIBU4053BC	 PQWI1G2680HA	 PQVIE3324F0E	

12.2. Handset

 PQVI16107AGA	 PQVTXP151A13, PQVTDTC143E, PQVDTA143TU, 2SD1819A,		 LNJ115W8PRA MA2ZD1400 MA8150, MA111	 PQVDSML310MT PQVDBR1111C	PQWITG2680NR PQVINJM2135R
PQVIC61CC22N PQVIC61CC20N	2SA1797Q	LNJ115W89RA	PQVIC68B120M PQVDEP10LA03 PQVIXCR3302M PQVIMM1385EN	 PQVDEC10 PQVDPTZTE25	

13. BLOCK DIAGRAM (Base Unit)

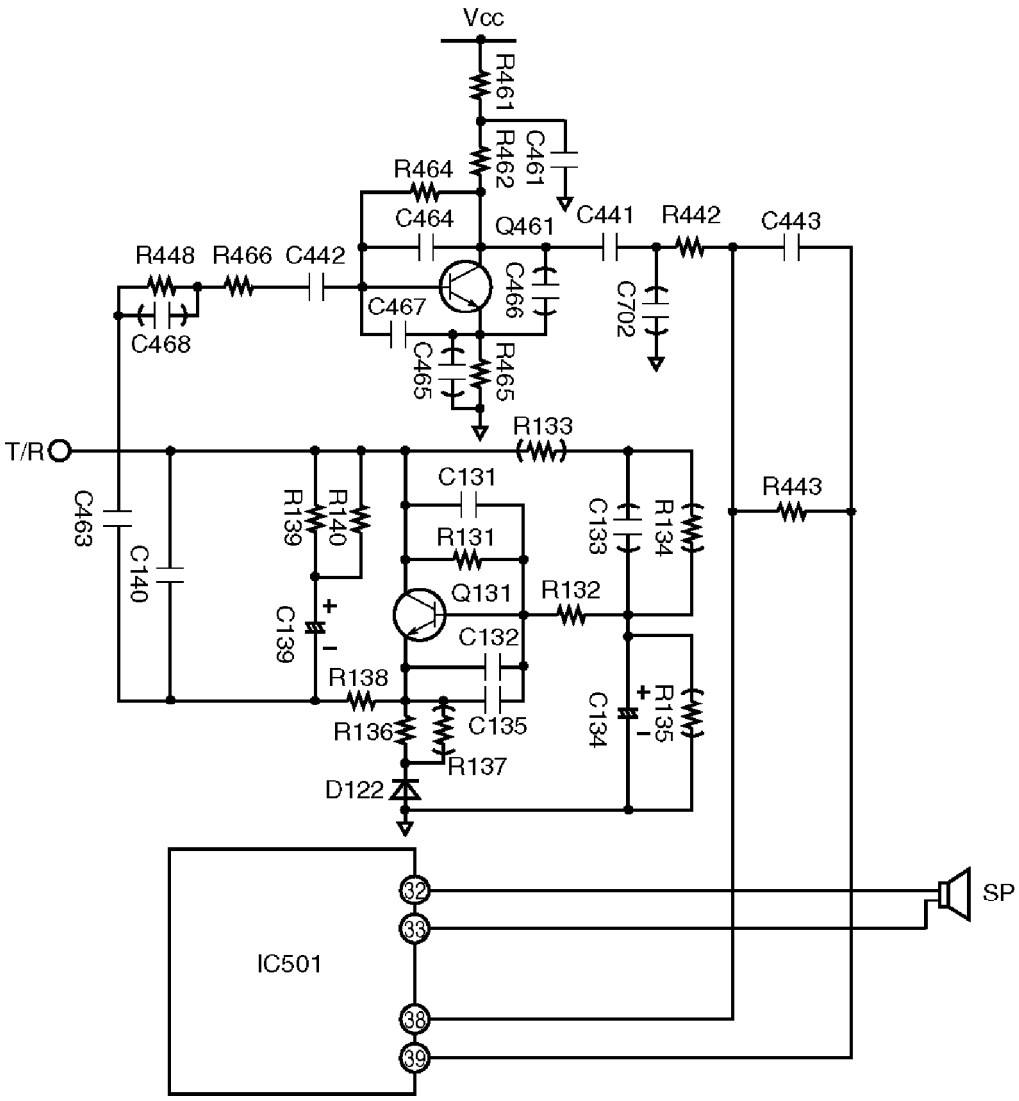
14. CIRCUIT OPERATION (Base Unit)

14.1. SP-PHONE RX Circuit

Circuit Operation:

Telephone Line (T/R) → Q131 → C463 → R448 → C442 → R464 → C441 → pin 38 of IC501 → pins 32 and 33 of IC501 → Speaker

Circuit Diagram

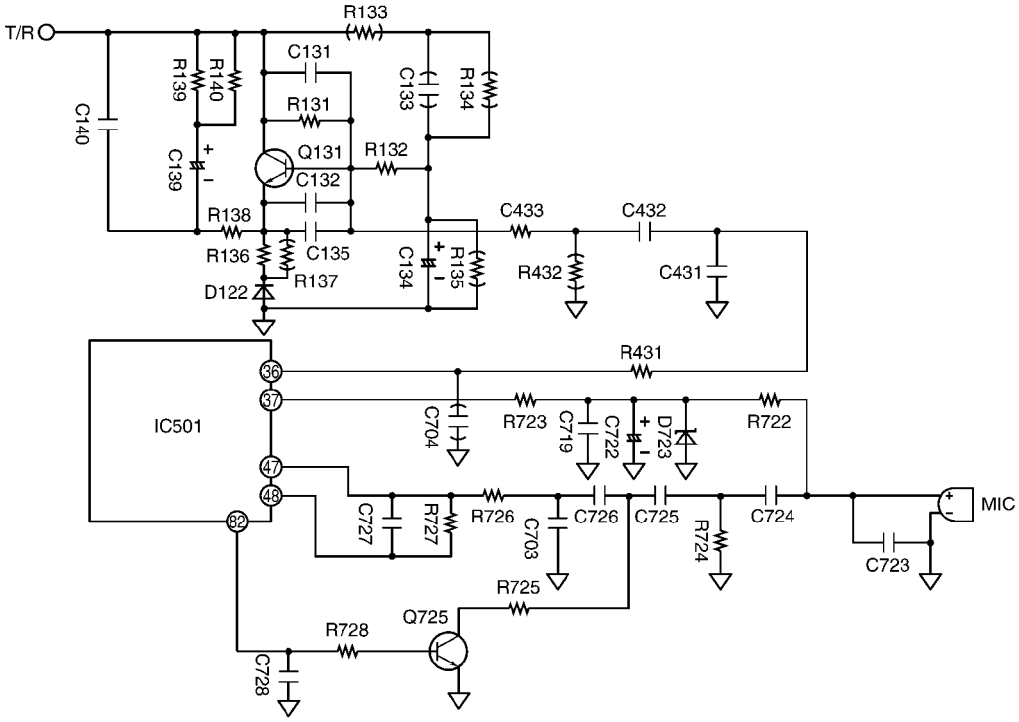


14.2. SP-PHONE TX Circuit

Circuit Operation:

MIC → C724 → C725 → C726 → R726 → pin 47 of IC501 → pin 36 of IC501 → R431 → C432 → C433 → Telephone Line

Circuit Diagram



14.3. Auto Disconnect Circuit

Function:

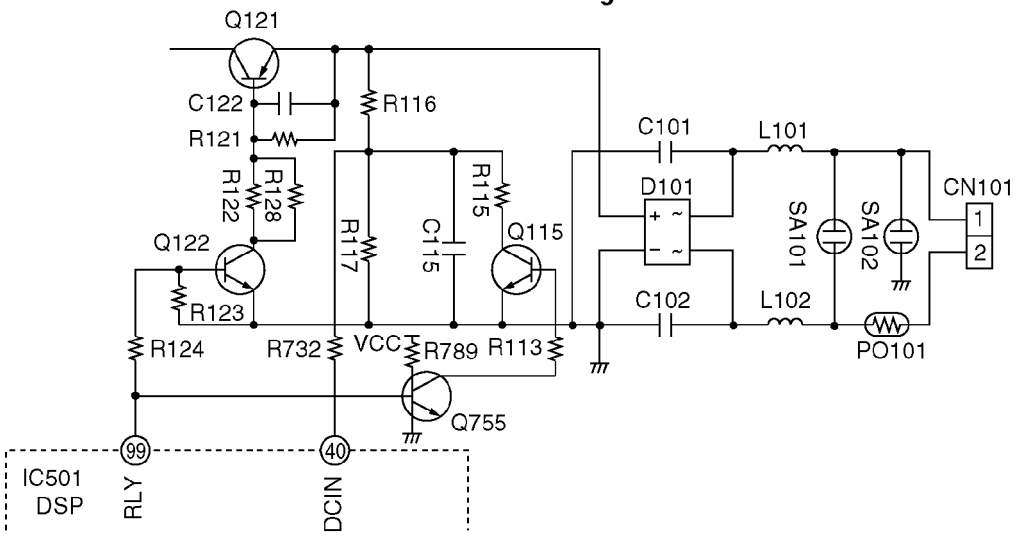
This circuit is used to detect the fact that another telephone connected to the same line is OFF-HOOK while the unit is in a receiving status or OGM transmitting status.

Circuit Operation:

The voltage pin 40 of IC501 is monitored. If a parallel-connected telephone is put into an OFF HOOK status, the presence/absence of a parallel connection is determined when the voltage changes by 0.2V or more.

When the set detects the parallel-connected telephone is OFF HOOK status, the line is disconnected.

Circuit Diagram



14.4. Power Supply Circuit with DC-DC Converter

Function:

Power from the AC adaptor passes through a DC-DC converter consisting of Q302, L302, D302 and IC302.

DC-DC converter down convert from 9V to 6.1V to get more current with low power loss and low heat radiation.

Circuit Operation:

IC301 is a regulated power supply. The voltage at point A is regulated to 4.5 V by IC301.

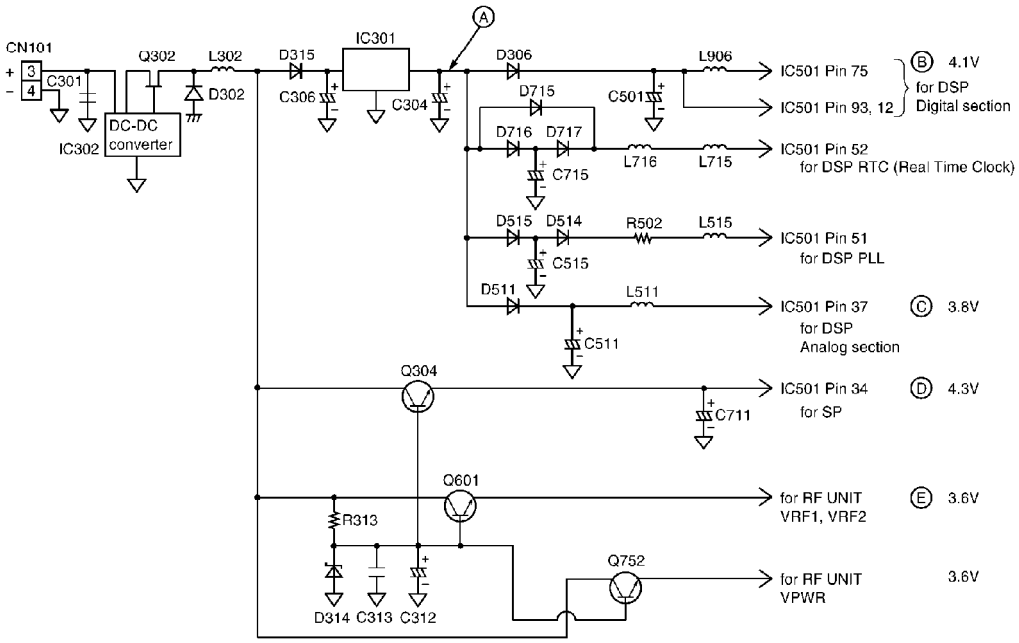
The voltage at point B is dropped by D306 to 4.1 V.

The voltage at point C is dropped by D511 to 3.8 V.

The voltage at point D is dropped by Q304 to 4.3V

The voltage at point E is dropped by Q601 to 3.6V

Circuit Diagram



14.5. DTMF Signal

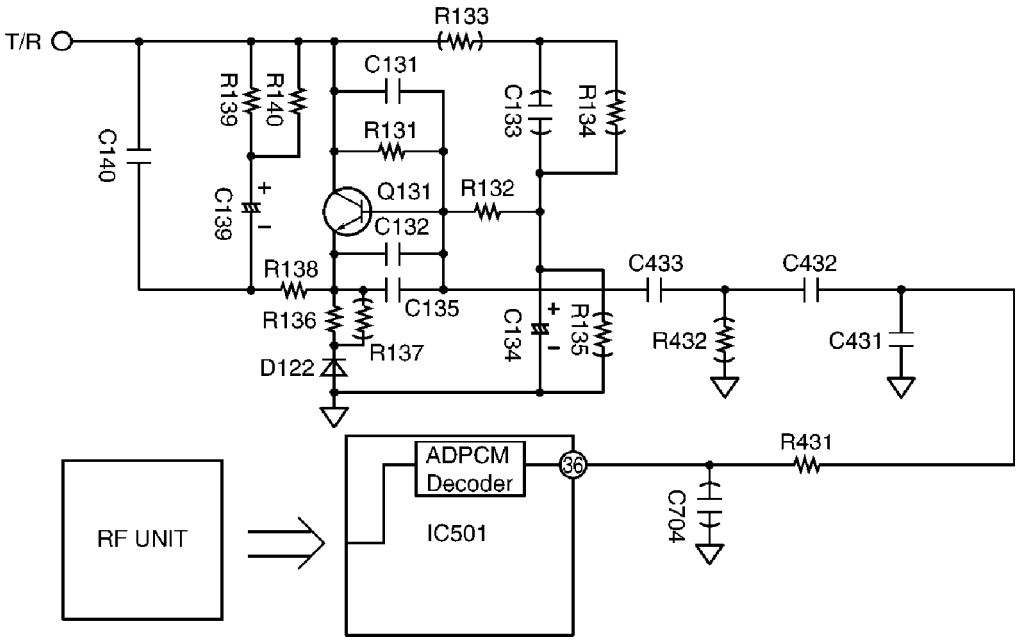
When the DTMF data from the Handset is received, the DTMF signal is output from pin 36 of IC501 and sent to the line through Q131.

14.6. Line Sending Signal

The coded signal input from the RF unit is decoded by IC501.

The audio signal output from IC501-36 and is input to telephone line.

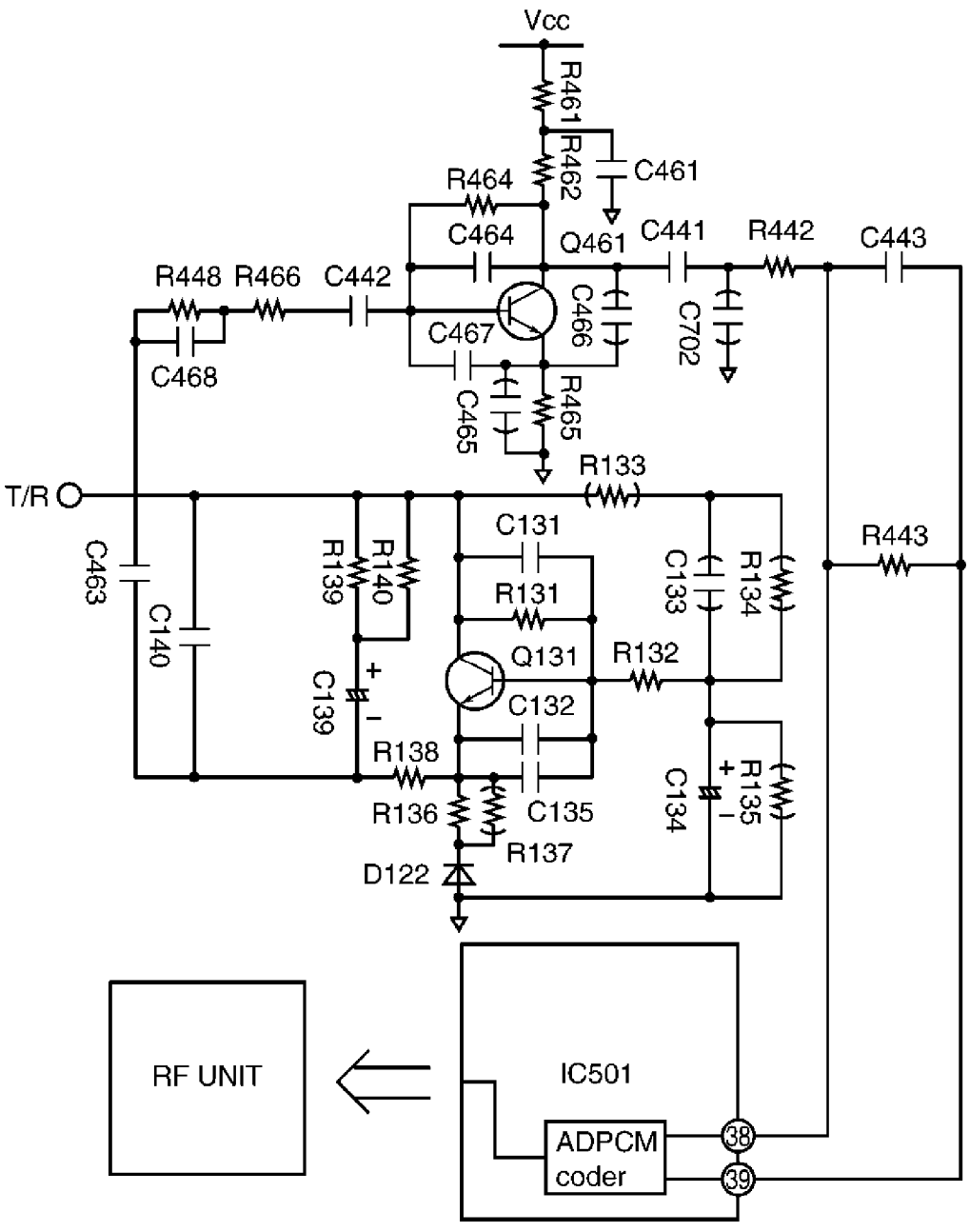
Circuit Diagram



14.7. Line Receiving Signal

The audio signal from line passes through Q131 and Q461 to pin38 and 39 of IC501(DSP). IC501 modulates this input audio signal to output to the RF unit.

Circuit Diagram



14.8. Calling Line Identification Circuit (Caller ID)

Function:

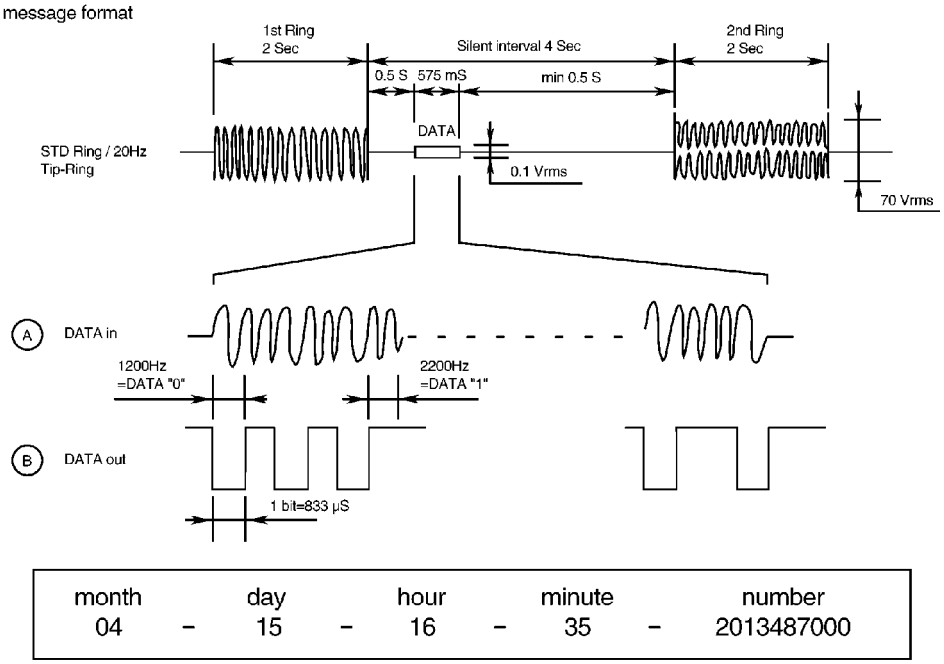
The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used.

The data for the caller ID from the telephone exchange is sent during the interval between the first and second rings of the bell signal. The data from the telephone exchange is a modem signal which is modulated in an FSK (Frequency Shift Keying) format. Data "0" is a 1200 Hz sine wave, and data 1 a 2200 Hz sine wave.

There are two type of the message format which can be received: i.e. the single message format

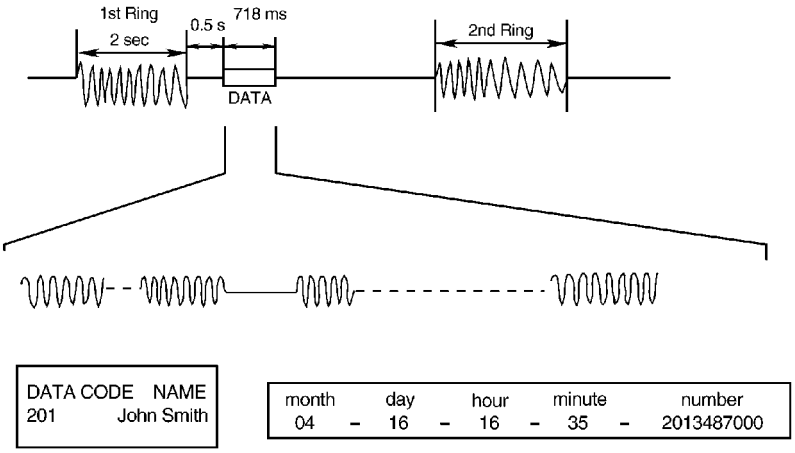
and plural message format. The plural message format allows to transmit the name and data code information in addition to the time and telephone number data.

- Single message format



month	day	hour	minute	number
04 -	15 -	16 -	35 -	2013487000

- Plural message format



DATA CODE	NAME
201	John Smith

month	day	hour	minute	number
04 -	16 -	16 -	35 -	2013487000

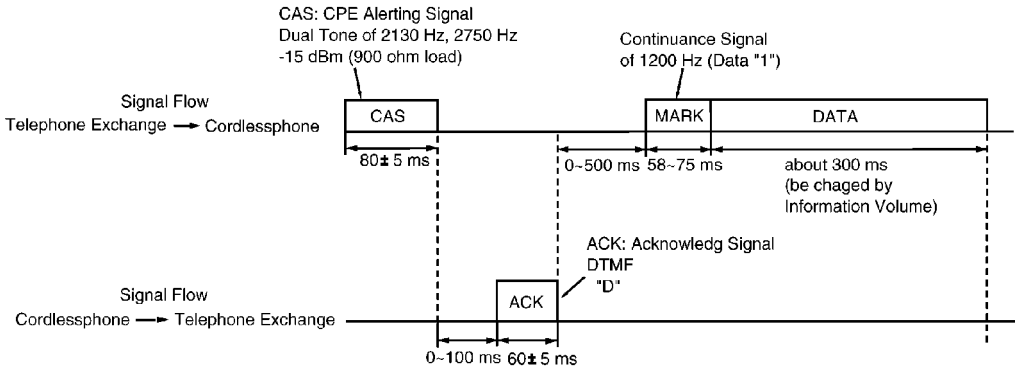
Call Waiting

Calling Identity Delivery on Call Waiting (CIDCW) is a CLASS service that allows a customer, while off-hook on an existing call, to receive information about a calling party on a waited call. The transmission of the calling information takes place almost immediately after the customer is alerted to the new call so he/she can use this information to decide whether to take the new call.

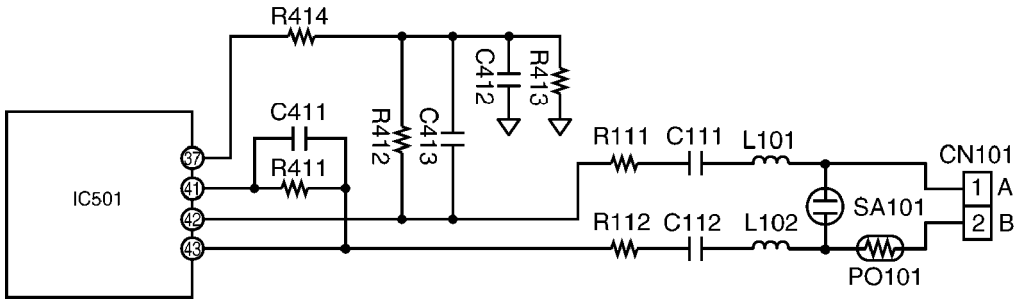
Function:

The CAS signal flows from T/R → R111, R112 collector → C111, C112 → IC501 pins 41~43 and the ACK (DTMF signal) is returned to the telephone exchange. The telephone exchange that received the ACK can send the data in the same manner as the caller ID. If the unit deems that a telephone connected in parallel is in use, ACK is not returned even if CAS is received, and the information for the second and subsequent callers is not displayed on the portable handset display.

Call Waiting Format



Circuit Diagram



14.9. Parallel Connection Detection Circuit

Function:

In order to disable call waiting and stutter tone functions when using telephones connected in parallel, it is necessary to have a circuit that judges whether a telephone connected in parallel is in use or not. This circuit determines whether the telephone connected in parallel is on hook or off hook by detecting changes in the T/R voltage.

Circuit Operation:

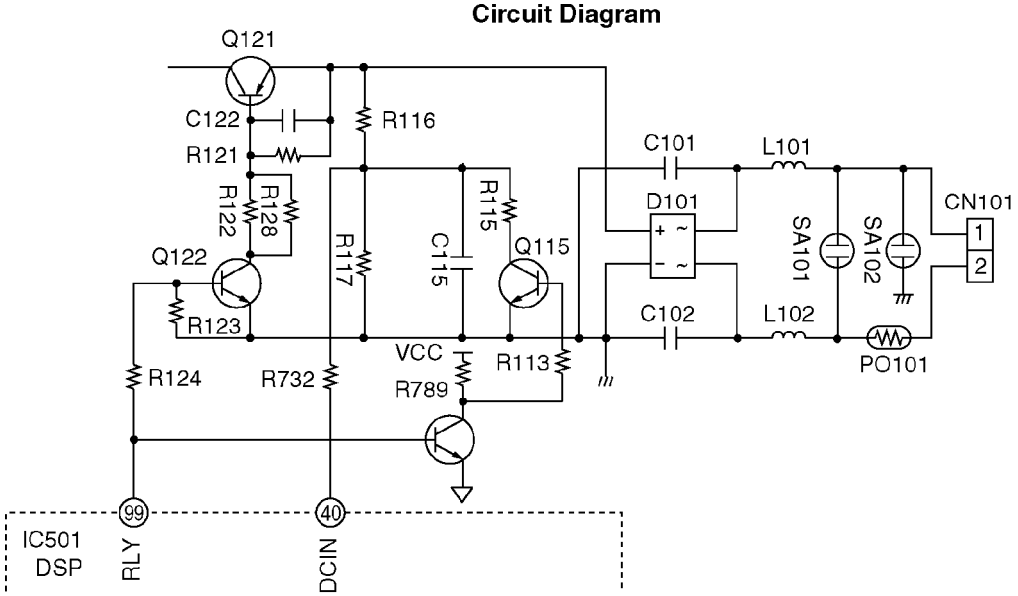
Parallel connection detection when on hook:

When on hook Q115 is ON, the voltage is monitored pin 40 of IC501. There is no parallel connection if the voltage is 1.65 V or higher, while a parallel connection is deemed to exist if the voltage is lower.

Parallel connection detection when off hook:

When off hook Q115 is OFF, the voltage is monitored pin 40 of IC501; the presence/absence of a parallel connection is determined when the voltage changes by 0.2 V or more.

Circuit Diagram



14.10. DSP (Digital Speech/Signal Processing) Circuit

General Description:

(IC501, IC751) is a digital speakerphone/speech/signal processing system that implements all the functions of speech compression, record and playback, and memory management required in a digital telephone answering machine.

The DSP system is fully controlled by a host processor IC501. The host processor provides activation and control of all that functions, such as speech Recording, Playback, Tone detecting and Line monitoring.

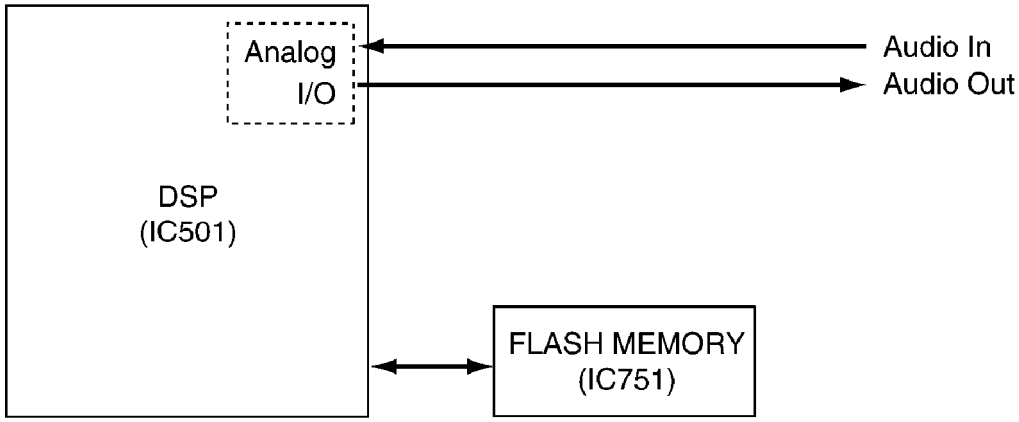
The DSP system comprises of following.

— a Host Processor.

— a Digital Signal Processor which includes the firmware implemented functions.

— a FLASH MEMORY (IC751), which is used for stored voice messages and synthesized voice.

Circuit Diagram



- Voice Message Recording

The DSP system use a proprietary speech compression technique to record and store voice message in FLASH MEMORY (IC751). An error correction algorithm is used to enable playback of these

messages from the FLASH MEMORY (IC751).

- DTMF Detection

  The DTMF detection is implemented by the DSP system in software. The DTMF detection is performed during Record, Playback, and Line Monitoring modes of operation.

- Synthesized Voice

  The DSP implements synthesized Voice, utilizing the built in speech detector and an FLASH MEMORY (IC751), which stored the vocabulary.

- Caller ID and Call Waiting CID demodulation

  The DSP implements monitor and demodulate the FSK signals that provide CID information from the Central Office.

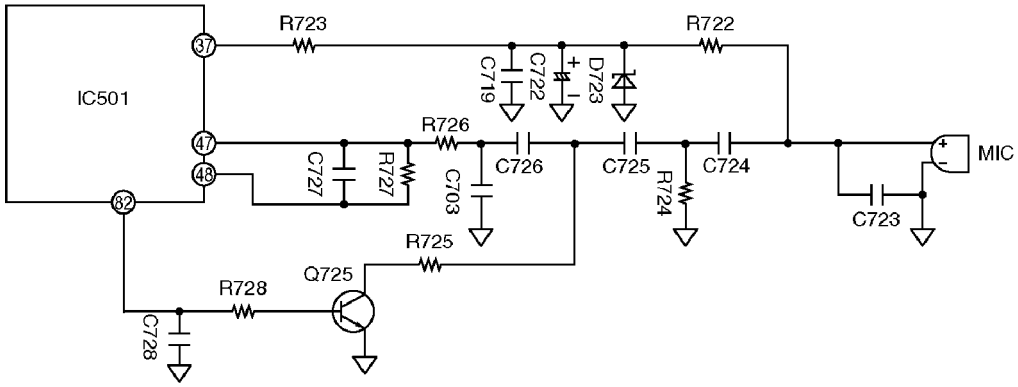
14.11. Greeting Recording Circuit

Circuit Operation:

MIC → C724 → C725 → C726 → R726 → pin 47 of IC501.

When Pin82 of IC501 is "high" TX audio from MIC is muted.

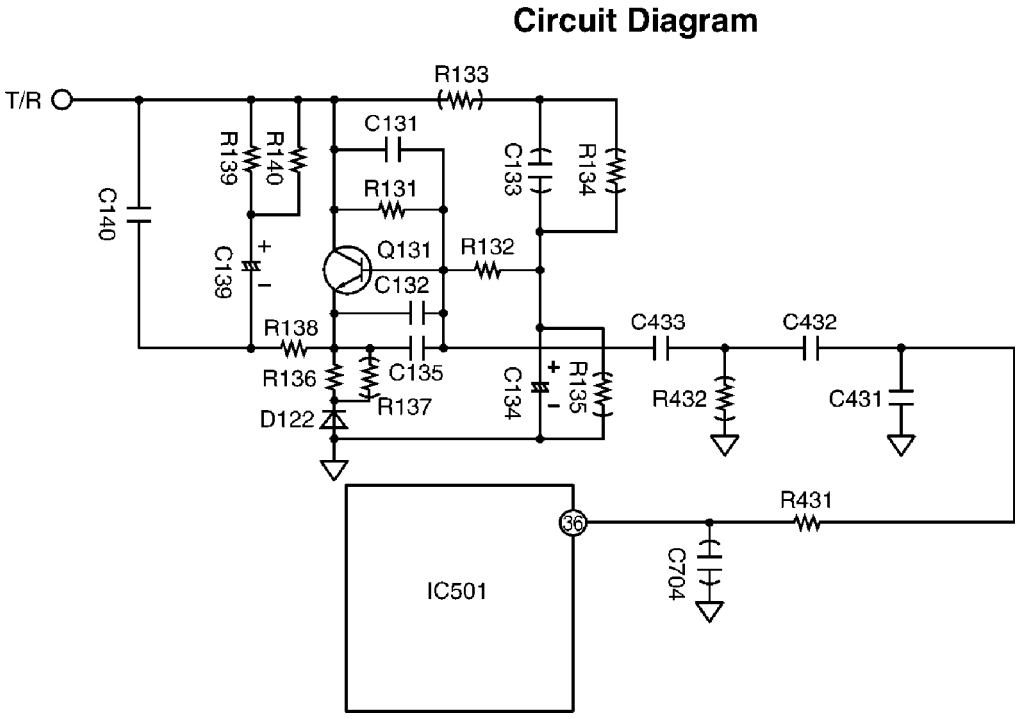
Circuit Diagram



14.12. Greeting Play Back Circuit

Circuit Operation:

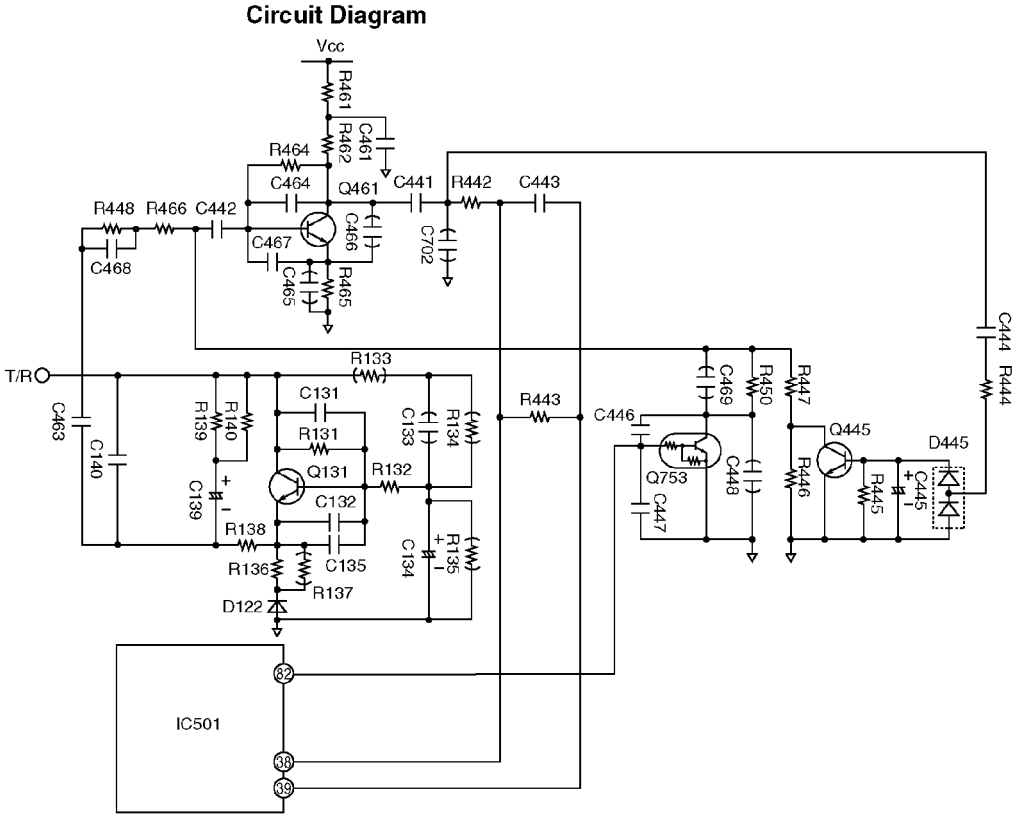
pin36 of IC501 → R431 → C432 → C433 → Telephone Line.



14.13. ICM Recording Circuit

Circuit Operation:

Telephone Line → Q131 → C463 → R448 → C442 → R464 → C441 → pin 38 and 39 of IC501.

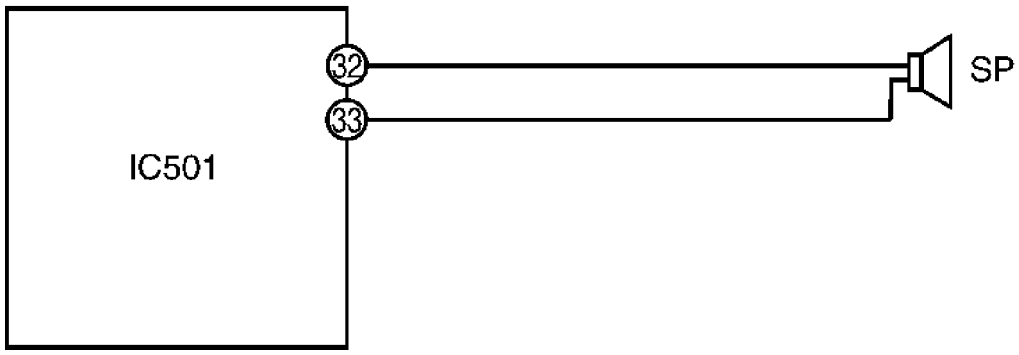


14.14. ICM Play Circuit

Circuit Operation:

pins 32 and 33 of IC501 → Speaker.

Circuit Diagram



14.15. Telephone Line Interface

Circuit Operation:

- ANSWER

In the idle mode, Q121 is open to cut the DC loop current and decrease the ring load. When ring voltage appears at the Tip (T) and Ring (R) leads (When the telephone rings), the AC ring voltage is transferred as follows:

T → L101 → R103 → C103 → Q101 → IC501 pin 64.

When the CPU (DSP) detects a ring signal, Q121 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the voice signal.

T → D101 → Q121 → Q131 → R138 → C140 → D101 → L102 → PO101 → R

- ON HOOK

Q121 is open, Q121 is connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an on-hook condition.

- SPECIFICATIONS

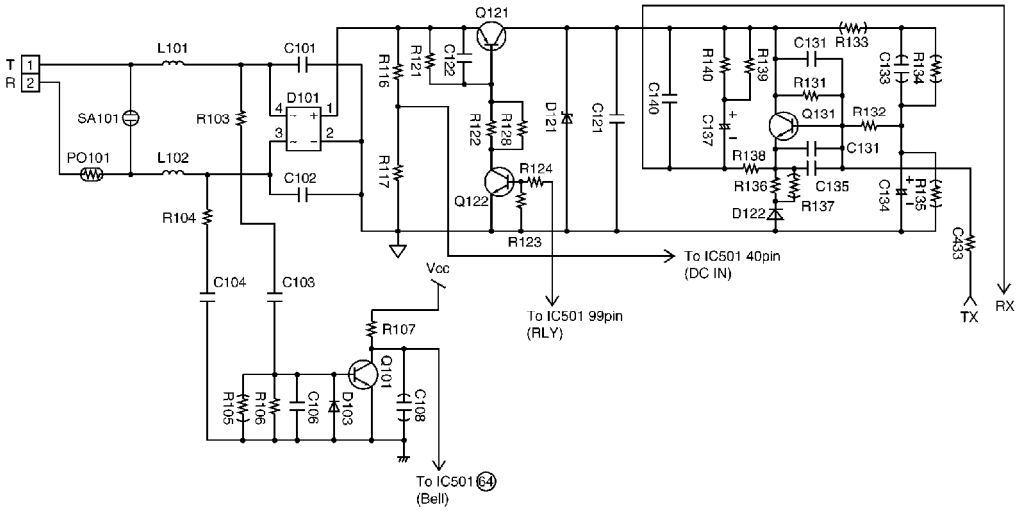
In the on-hook state (idle), the current flows between the telephone line and the unit is as follows:

T → L101 → R103 → C103 → R106 → C104 → R104 → L102 → PO101 → R.

The DC component is blocked by C103, C104: thereby providing an on-hook condition.

The AC interface impedance is over 47 kΩ ; thus, satisfying the telephone company requirements.

Circuit Diagram



14.16. Intercom Mode

1. **When the base unit LOCATOR/INTERCOM button is pressed, a call monitor signal (intercom sound) is output from pins 32 and 33 of IC501. Thus a monitor tone is heard from the speaker.**
2. **“Paging” is displayed on LCD. This status is called “Intercom stand-by”.**
3. **The receiving signal flows:**
   RF → pin 32 and 33 of IC501 → SP
4. **The transmission signal flows:**
   MIC → C724 → C725 → C726 → R726 → pin 47 of IC501 → RF

14.17. Initializing Circuit

Function:

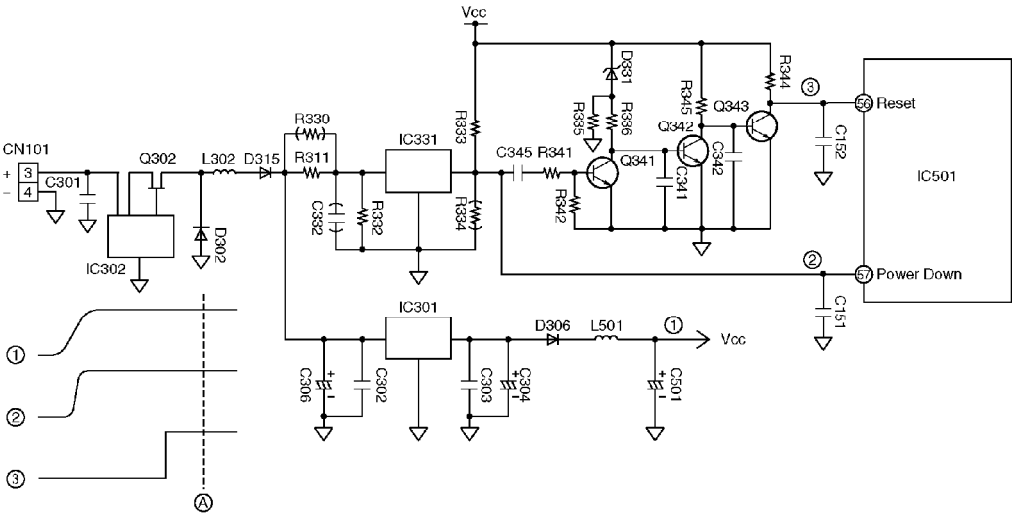
This circuit is used for to initialize the microcomputer when it incorporates an AC adaptor.

Circuit Operation:

When the AC Adaptor is inserted into the unit, then the voltage is shifted by IC301, D306 and power is supplied to the DSP.

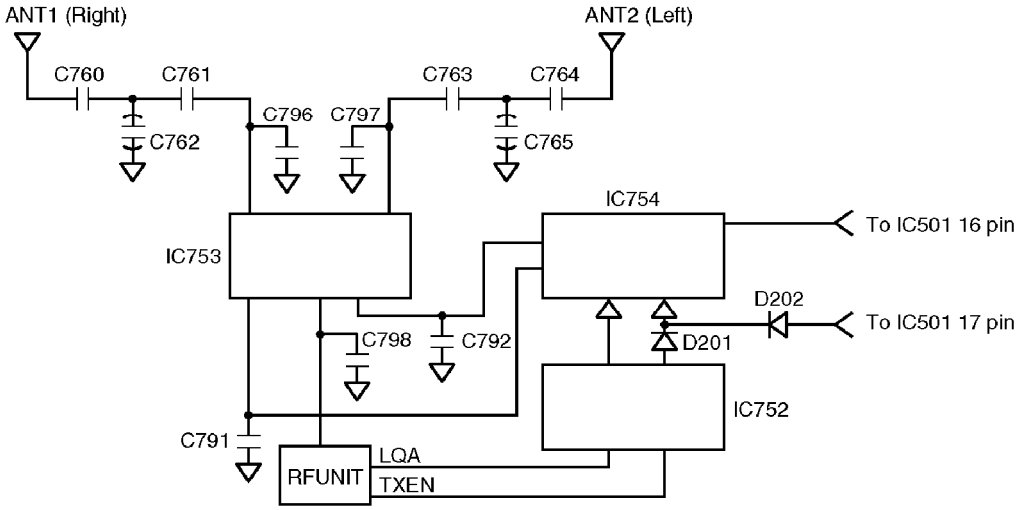
The set can operate beyond point A in the circuit voltage diagram.

Circuit Diagram



14.18. Antenna Diversity

Antenna Diversity improve conversation quality. This means to reduce some noise during conversation. RF unit send LQA (Link Quality Alarm) signal to IC754 when detecting weak RF signal. Then IC754 control RF switch IC753 to switch another Antenna.



15. BLOCK DIAGRAM (Handset)

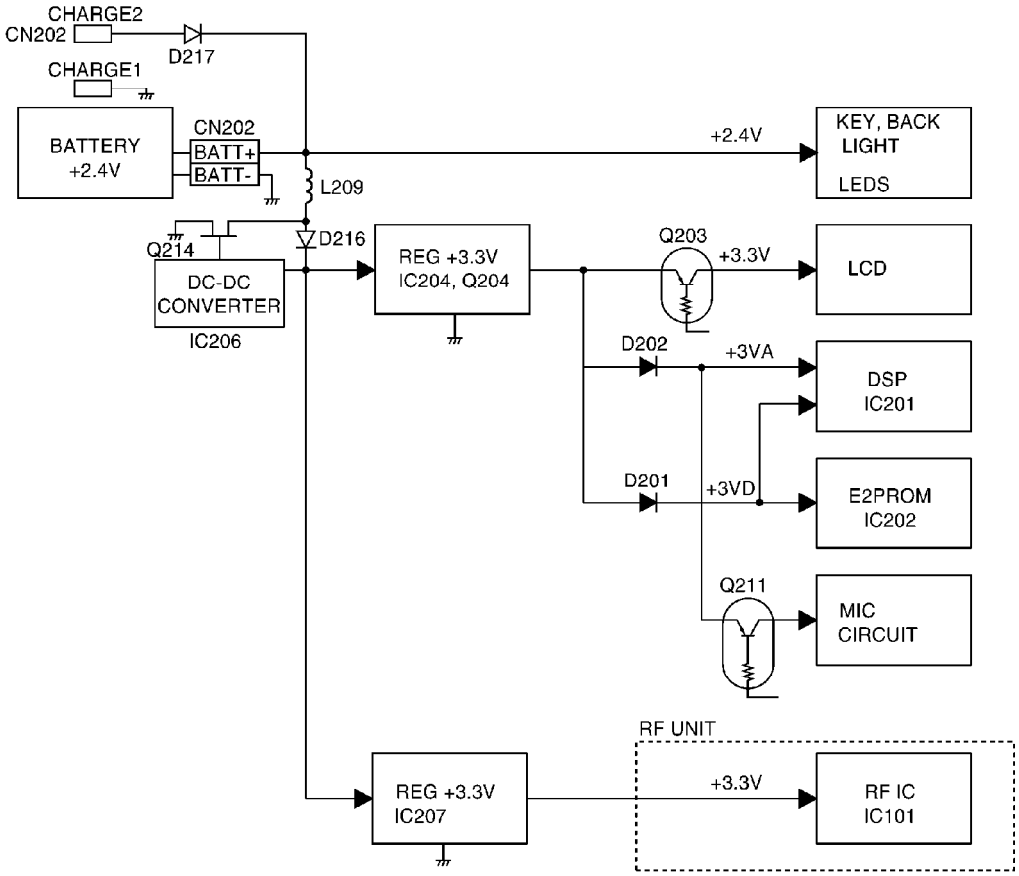
16. CIRCUIT OPERATION (Handset)

16.1. Power Supply Circuit (DC-DC Converter)

Voltage is supplied separately to each block.

DC-DC converter is consisted in IC206, Q214, D216 and L209. DC-DC converter upconvers from 2.4V to 3.6V using two cell Ni-MH battery.

Block Diagram (Handset Power)

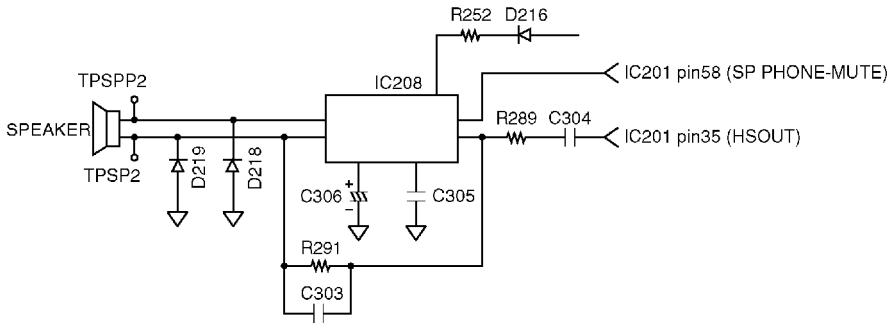


16.2. Charge Circuit

Ni-MH battery is connected to CN202. When the handset is put on the cradle of the base unit, the power is supplied from CHARGE1 and CHARGE2 terminals to charge the battery. Q207 detects the voltage of CHARGE1 and CHARGE2 terminals, then the handset makes ID code setting (*) with the base unit.

16.3. Ringer and SP-Phone Circuit

TG2680N has SP-phone for hands free operation TG2670N also uses this SP-Phone speaker for Ringer. Press key to use SP-Phone. Then received signal output is switched to pin35 of IC201(DSP). This output signal is amplified by IC208, and fed into speaker. When ringer beeping, ringer signal is also output from pin35 of IC201(DSP). After that, same as above.

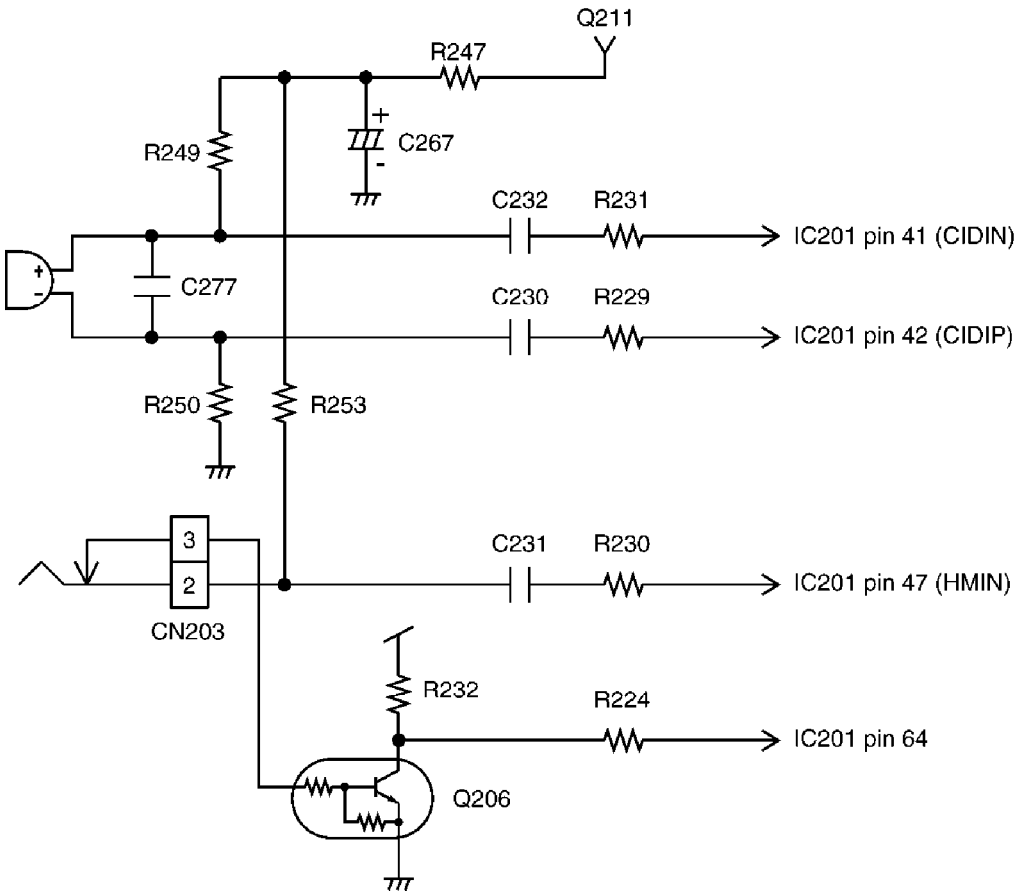


16.4. Sending Signal

The voice signal from the microphone input to pin 42 (CIDIP) and pin 41(CIDIN) of IC201 (DSP). CN203 is the headphone jack. When the headphone is connected, the Q206 detect it. The input

from the microphone of the handset (CIDIN, CIDIP) is cut and the microphone signal from the headphone is input to pin 47 of IC201 (HMIN). Also the power for the microphone is supplied from Q211, and the power is turned OFF on standby.

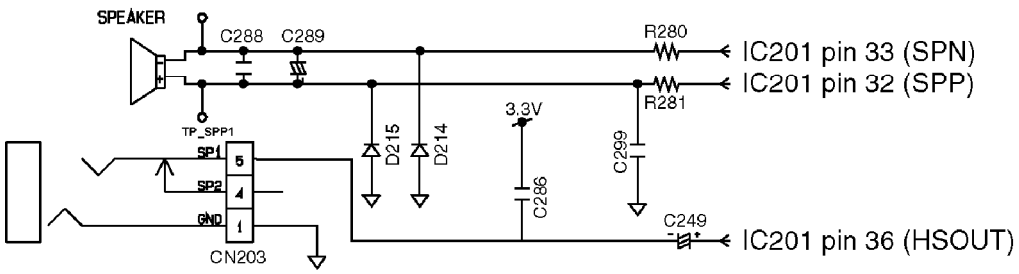
Circuit Diagram



16.5. Reception Signal Circuit

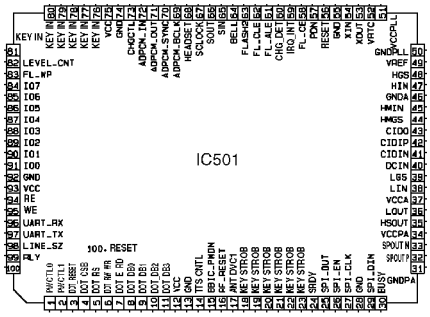
The received signal from the base unit is output from pins 33 (SPN) and 32 (SPP) of IC201 (DSP) as the voice signal. SPN is the inverse output of SPP, and the speaker is driven by SPN and SPP. CN203 is the headphone jack. When the headphone is connected to this jack, the output to the speaker of the handset (SPN,SPP) is cut and the voice signal is output to the headphone (HSOUT) only.

Circuit Diagram



17. CPU DATA (Base Unit)

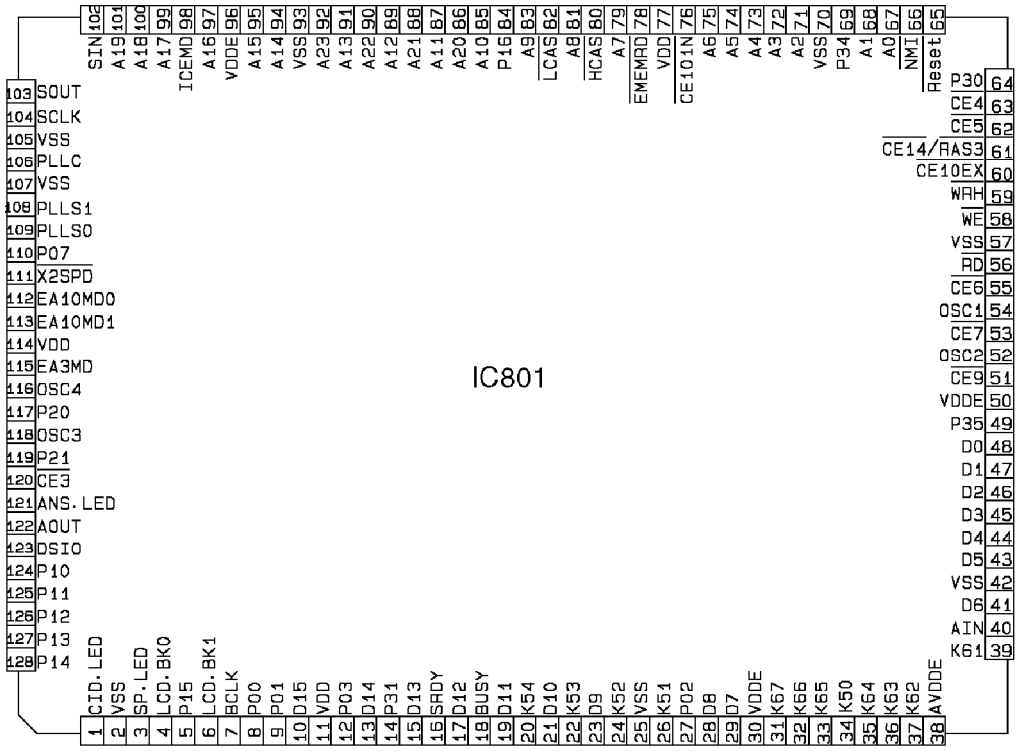
17.1. IC501



Pin	Description	I/O	High	High_Z	Low
1	PWCTL0	D.O	pin2=Hi-Z:HighPower pin2=L:	-	pin2=Hi-Z:LowPower pin2=L:SuperLowPower
2	PWCTL1	D.O	-	pin1=H:HighPower pin1=L:LowPower	pin1=H:- pin1=L:SuperLowPower
3	DOT_RESET	D.O	Normal	-	Reset
4	DOT_CSB	D.O	Not	-	Active
5	DOT_RS	D.O	Data	-	Instruction
6	DOT_RW_WR	D.O	Read	-	Write
7	DOT_E_RD	D.O	Active	-	Not
8	DOT_DB0	D.O	High	-	Low
9	DOT_DB1	D.O	High	-	Low
10	DOT_DB2	D.I	High	-	Low
11	DOT_DB3	D.O	High	-	Low
12	VCC	VCC	Vcc	-	-
13	GND	GND	-	-	GND
14	TTS CNTL	D.O	Headset	-	TTS
15	BBIC_PWDN	D.O	Not	-	Active
16	RF_RESET	D.O	Normal	-	Reset
17	ATN DVC1	D.O	High	-	Low
18	KEY STROB	D.O	Active	Not	-
19	KEY STROB	D.O	Active	Not	-
20	KEY STROB	D.O	Active	Not	-
21	KEY STROB	D.O	Active	Not	-
22	KEY STROB	D.O	Active	Not	-
23	KEY STROB	D.O	Active	Not	-
24	SRDY	D.I	Ready	-	Busy
25	SPI_OUT	D.O	High	-	Low
26	SPI_EN	D.O	Not	-	Active
27	SPI_CLK	D.O	High	-	Low
28	GND	GND	-	-	GND
29	SPI_DIN	D.I	High	-	Low
30	BUSY	D.I	Announce	-	No Announce
31	GNDPA	GND	-	-	GND
32	SPOUT P	A.O	-	-	-
33	SPOUT N	A.O	-	-	-
34	VCCPA	VCC	VCC	-	-
35	HSOUT	A.O	-	-	-
36	LOUT	A.O	-	-	-
37	VCCA	VCC	VCC	-	-
38	LIN	A.I	-	-	-
39	LGS	A.O	-	-	-
40	DCIN	A.I	-	-	-
41	CIDIN	A.I	-	-	-
42	CIDIP	A.I	-	-	-
43	CIDO	A.O	-	-	-
44	HMGS	A.O	-	-	-
45	HMIN	A.I	-	-	-
46	GNDA	GND	-	-	GND
47	MIN	A.I	-	-	-
48	MGS	A.O	-	-	-
49	VREF	A.O	-	-	-
50	GNDPLL	GND	-	-	GND

Pin	Description	I/O	High	High_Z	Low
51	VCCPLL	VCC	VCC	-	-
52	VRTC	VCC	VCC	-	-
53	XOUT	A.O	-	-	-
54	XIN	A.I	-	-	-
55	GND	GND	-	-	GND
56	RESET	D.I	Normal	-	Reset
57	PDN	D.I	Power On	-	Power Down
58	FL_CE	D.O	Not	-	Active
59	IRQ_INT	D.I	Normal	-	Interrupt
60	CHG_DET	D.I	Off Charge	-	On Charge
61	FL_ALE	D.O	Latch	-	Not
62	FL_CLE	D.O	Latch	-	Not
63	FLASH2	D.O	Normal	-	-
64	BELL	D.I	High	-	Low
65	SIN	D.I	High	-	Low
66	SOUT	D.O	High	-	Low
67	SCLOCK	D.O	High	-	Low
68	HANDSET	D.I	Headset In	-	Non
69	ADPCM_BCLK	D.I	High	-	Low
70	ADPCM_SYNC	D.I	High	-	Low
71	ADPCM_OUT	D.I	High	-	Low
72	ADPCM _IN	D.O	High	-	Low
73	CHG_CTL	D.O	-	Charge	Non Charge
74	GND	GND	-	-	GND
75	VCC	VCC	VCC	-	-
76	KEY IN	D.I	Key In	-	Non
77	KEY IN	D.I	Key In	-	Non
78	KEY IN	D.I	Key In	-	Non
79	KEY IN	D.I	Key In	-	Non
80	KEY IN	D.I	Key In	-	Non
81	KEY IN	D.I	Key In	-	Non
82	LEVEL_CNT	D.O	Not	-	Recording
83	FL_WP	D.O	Off	-	On
84	IO7	D.O	High	-	Low
85	IO6	D.O	High	-	Low
86	IO5	D.O	High	-	Low
87	IO4	D.O	High	-	Low
88	IO3	D.O	High	-	Low
89	IO2	D.O	High	-	Low
90	IO1	D.O	High	-	Low
91	IO0	D.O	High	-	Low
92	GND	GND	-	-	GND
93	VCC	VCC	VCC	-	-
94	RE	D.O	Active	-	Not
95	WE	D.O	Active	-	Not
96	UART_RX	D.I	High	-	Low
97	UART_TX	D.O	High	-	Low
98	LINE_SZ	D.O	On	-	Off
99	RLY	D.O	On	-	Off
100	RESET	D.O	Active	-	Reset

17.2. IC801



Pin	Description	I/O	High	High-Z	Low
1	CID_LED	D.O	ON	-	OFF
2	VSS	GND	-	-	GND
3	SP_LED	D.O	ON	-	OFF
4	LCD_BK0	D.O	OFF	-	ON
5	NC	D.O	-	-	Normal
6	LCD_BK1	D.O	OFF	-	ON
7	NC	D.O	High	-	Low
8	NC	D.O	-	-	Normal
9	NC	D.O	-	-	Normal
10	D15	D.I/O	High	-	Low
11	VDD	VCC	VCC	-	-
12	NC	D.O	-	-	Normal
13	D14	D.I/O	High	-	Low
14	NC	D.O	-	-	Normal
15	D13	D.I/O	High	-	Low
16	SRDY	D.O	Ready	-	Busy
17	D12	D.I/O	High	-	Low
18	BUSY	D.O	Announce	-	No Announce
19	D11	D.I/O	High	-	Low
20	K54	D.I	-	-	Normal
21	D10	D.I/O	High	-	Low
22	K53	D.I	-	-	Normal
23	D9	D.I/O	High	-	Low
24	K52	D.I	-	-	Normal
25	VSS	GND	-	-	GND

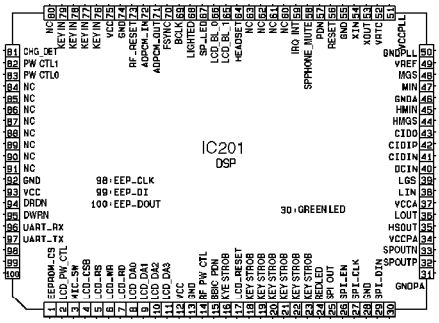
Pin	Description	I/O	High	High-Z	Low
26	K51	D.I	-	-	Normal
27	NC	D.O	-	-	Normal
28	D8	D.I/O	High	-	Low
29	D7	D.I/O	High	-	Low
30	VDDE	VCC	VCC	-	-
31	K67	D.I	-	-	Normal
32	K66	D.I	-	-	Normal
33	K65	D.I	-	-	Normal
34	K50	D.I	-	-	Normal
35	K64	D.I	-	-	Normal
36	K63	D.I	-	-	Normal
37	K62	D.I	-	-	Normal
38	AVDDE	VCC	VCC	-	-
39	K61	D.I	-	-	Normal
40	AIN	D.I	-	-	Normal
41	D6	D.I/O	High	-	Low
42	VSS	GND	-	-	GND
43	D5	D.I/O	High	-	Low
44	D4	D.I/O	High	-	Low
45	D3	D.I/O	High	-	Low
46	D2	D.I/O	High	-	Low
47	D1	D.I/O	High	-	Low
48	D0	D.I/O	High	-	Low
49	NC	D.O	-	-	Normal
50	VDDE	VCC	VCC	-	-
51	CE9	D.O	Not	-	Active
52	OSC2	A.O	-	-	-
53	CE7	D.O	Not	-	Active
54	OSC1	A.I	-	-	-
55	CE6	D.O	Not	-	Active
56	RD	D.O	Not	-	Active
57	VSS	GND	-	-	GND
58	WE	D.O	Not	-	Active
59	WRH	D.O	Not	-	Active
60	CE10EX	D.O	Not	-	Active
61	RAS3	D.O	Not	-	Active
62	CD5	D.O	Not	-	Active
63	CE4	D.O	Not	-	Active
64	NC	D.O	-	-	Normal
65	RESET	D.I	Normal	-	Reset
66	NMI	D.I	Cold Start	-	Hot Start
67	A0	D.O	High	-	Low
68	A1	D.O	High	-	Low
69	NC	D.O	-	-	Normal
70	VSS	GND	-	-	GND

Pin	Description	I/O	High	High-Z	Low
71	A2	D.O	High	-	Low
72	A3	D.O	High-	-	Low
73	A4	D.O	High	-	Low
74	A5	D.O	High	-	Low
75	A6	D.O	High	-	Low
76	CD10IN	D.O	Not	-	Active
77	VDD	VCC	VCC	-	-
78	EMEMRD	D.O	Not	-	Active
79	A7	D.O	High	-	Low
80	HCAS	D.O	Not	-	Active
81	A8	D.O	High	-	Low
82	LCS	D.O	High	-	Low
83	A9	D.O	High	-	Low
84	NC	D.O	-	-	Normal
85	A10	D.O	High	-	Low
86	A20	D.O	High	-	Low
87	A11	D.O	High	-	Low
88	A21	D.O	High	-	Low
89	A12	D.O	High	-	Low
90	A22	D.O	High	-	Low
91	A13	D.O	High	-	Low
92	A23	D.O	High	-	Low
93	VSS	GND	-	-	GND
94	A14	D.O	High	-	Low
95	A15	D.O	High	-	Low
96	VDDE	VCC	VCC	-	-
97	A16	D.O	High	-	Low
98	ICEMD	D.I	-	-	Normal
99	A17	D.O	High	-	Low
100	A18	D.O	High	-	Low
101	A19	D.O	High	-	Low
102	SIN	D.I	High	-	Low
103	SOUT	D.O	High	-	Low
104	SCLK	D.O	High	-	Low
105	VSS	GND	-	-	GND
106	PLLC	-	-	-	-
107	VSS	GND	-	-	GND
108	PLLS1	D.I	Normal	-	-
109	PLLS0	D.I	Normal	-	-
110	NC	D.O	-	-	Normal
111	X2SPD	D.I	-	-	Normal
112	EA10MD0	D.I	Normal	-	-
113	EA10MD1	D.I	Normal	-	-
114	VDD	VCC	VCC	-	-
115	EA3MD	D.I	Normal	-	-

Pin	Description	I/O	High	High-Z	Low
116	OSC4	A.O	-	-	-
117	NC	D.O	-	-	Normal
118	OSC3	A.I	-	-	-
119	NC	D.O	-	-	Normal
120	NC	D.O	High	-	Low
121	ANS_LED	D.O	ON	-	OFF
122	AOUT	D.O	High	-	Low
123	DSIO	D.I/O	High	-	Low
124	NC	D.O	-	-	Normal
125	NC	D.O	-	-	Normal
126	NC	D.O	-	-	Normal
127	NC	D.O	-	-	Normal
128	NC	D.O	-	-	Normal

18. CPU DATA (Handset)

18.1. IC201

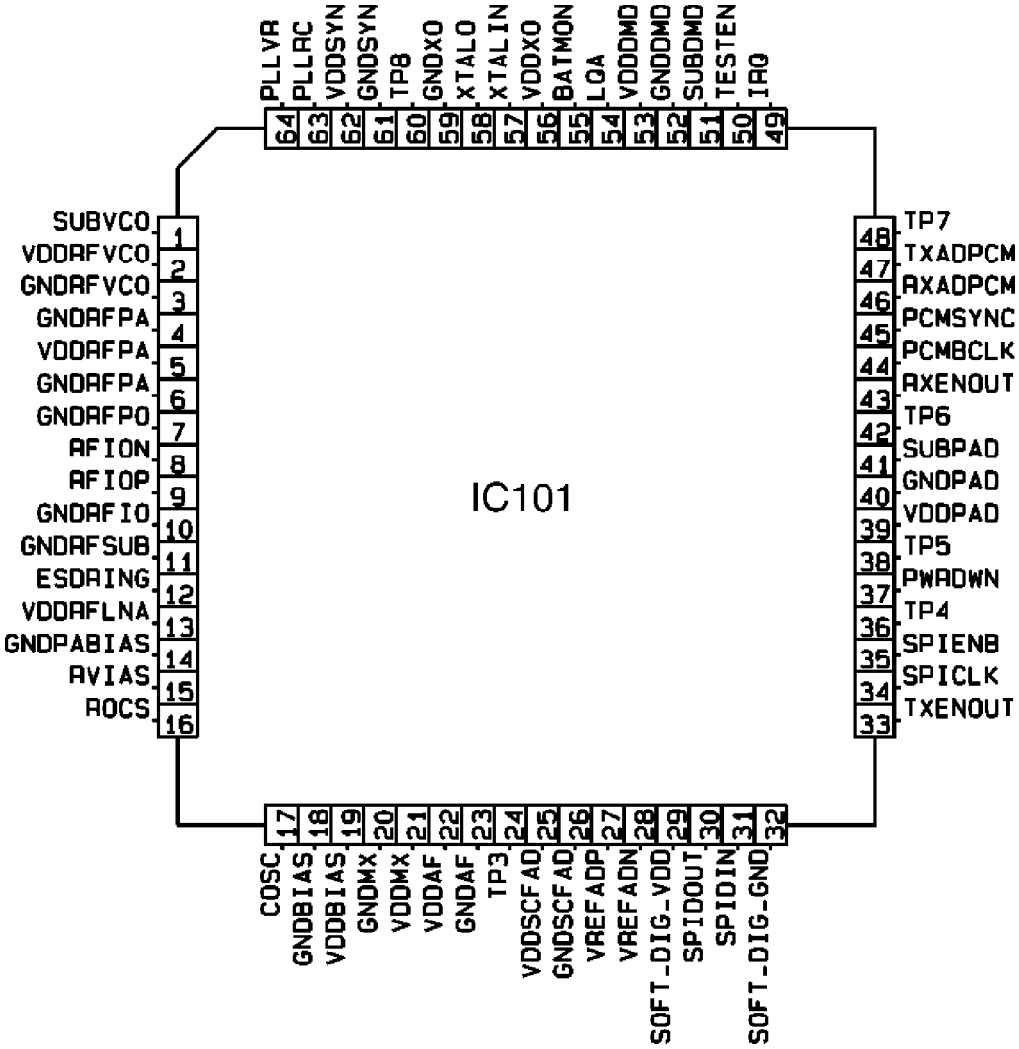


Pin	Description	I/O	High	High_Z	Low
1	EEPROM-CS	D.O	Active	-	Not
2	LCD_PW_CTL	D.O	Off	-	On
3	MIC_SW	D.O	Bias Off	-	Bias On
4	LCD_CSB	D.O	Not	-	Active
5	LCD_RS	D.O	Data	-	Instruct
6	LCD_WR	D.O	Read	-	Write
7	LCD_RD	D.O	Active	-	Not
8	LCD_DA0	D.O	High	-	Low
9	LCD_DA1	D.O	High	-	Low
10	LCD_DA2	D.O	High	-	Low
11	LCD_DA3	D.O	High	-	Low
12	VCC	VCC	Vcc	-	-
13	GND	GND	-	-	GND
14	RF_PW_CTL	D.O	Off	-	On
15	BBIC PDN	D.O	Not	-	Active
16	KYE STROB	D.O	Active	Not	-
17	LCD_RESET	D.O	Not	-	Reset
18	KYE STROB	D.O	Active	Not	-
19	KYE STROB	D.O	Active	Not	-
20	KYE STROB	D.O	Active	Not	-
21	KYE STROB	D.O	Active	Not	-
22	KYE STROB	D.O	Active	Not	-
23	KYE STROB	D.O	Active	Not	-
24	RED LED	D.O	Off	-	On
25	SPI_OUT	D.O	High	-	Low
26	SPI_EN	D.O	Not	-	Active
27	SPI_CLK	D.O	High	-	Low
28	GND	-	-	-	GND
29	SPI_DIN	D.I	High	-	Low
30	GREEN LED	D.O	Off	-	On
31	GNDPA	GND	-	-	GND
32	SPOUTP	A.O	-	-	-
33	SPOUTN	A.O	-	-	-
34	VCCPA	VCC	VCC	-	-
35	HSOUT	VCC	-	-	-
36	LOUT	VCC	-	-	-
37	VCCA	VCC	VCC	-	-
38	LIN	VCC	-	-	-
39	LGS	VCC	-	-	-
40	DCIN	VCC	-	-	-
41	CIDIN	VCC	-	-	-
42	CIDIP	VCC	-	-	-
43	CIDO	VCC	-	-	-
44	HMGS	VCC	-	-	-
45	HMIN	VCC	-	-	-
46	GNDA	VCC	-	-	GND
47	MIN	VCC	-	-	-
48	MGS	VCC	-	-	-
49	VREF	VCC	-	-	-
50	GNDPLL	VCC	-	-	GND

Pin	Description	I/O	High	High_Z	Low
51	VCCPLL	VCC	VCC	-	-
52	VRTC	VCC	VCC	-	-
53	XOUT	A.O	-	-	-
54	XIN	A.I	-	-	-
55	GND	GND	-	-	GND
56	RESET	D.I	Normal	-	Reset
57	PDN	D.I	Power On	-	Power Down
58	SPPHONE_MUTE	D.O	Unmute	-	Mute
59	IRQ_INT	D.I	Normal	-	Interrupt
60	NC	D.O	-	-	Normal
61	NC	D.O	-	-	Normal
62	NC	D.O	-	-	Normal
63	NC	D.O	-	-	Normal
64	HEAD_DET	D.I	Headset In	-	Non
65	LCD BL 1	D.O	On	-	Off
66	LCD_BL_0	D.O	On	-	Off
67	SP LED	D.O	Off	-	On
68	LIGHTED	D.O	On	-	Off
69	BCLK	D.I	High	-	Low
70	FSYNC	D.I	High	-	Low
71	ADPCM OUT	D.I	High	-	Low
72	ADPCM IN	D.O	High	-	Low
73	RF_RESET	D.O	Normal	-	Reset
74	GND	GND	-	-	GND
75	VCC	VCC	VCC	-	-
76	KEY IN	D.I	Key In	-	Non
77	KEY IN	D.I	Key In	-	Non
78	KEY IN	D.I	Key In	-	Non
79	KEY IN	D.I	Key In	-	Non
80	NC	D.O	-	-	Normal
81	CHG_DET	D.I	Off Charge	-	On Charge
82	PW CTL1	D.O	-	pin2=Hi-Z:HighPower -	pin2=Hi-Z:LowPower pin2=L:SuperLowPower
83	PW CTL0	D.O	pin1=H:HighPower pin1=L:LowPower	-	pin1=H:- pin1=L:SuperLowPower
84	NC	D.O	-	-	Normal
85	NC	D.O	-	-	Normal
86	NC	D.O	-	-	Normal
87	NC	D.O	-	-	Normal
88	NC	D.O	-	-	Normal
89	NC	D.O	-	-	Normal
90	NC	D.O	-	-	Normal
91	NC	D.O	-	-	Normal
92	GND	GND	-	-	GND
93	VCC	VCC	VCC	-	-
94	DRDN	VCC	VCC	-	-
95	DWRN	GND	-	-	GND
96	UART_RX	D.I	High	-	Low
97	UART_TX	D.O	High	-	Low
98	EEP_CLK	D.O	High	-	Low
99	EEP_DI	D.O	High	-	Low
100	EEP_DOUT	D.I	High	-	Low

19. EXPLANATION OF IC TERMINALS (RF Unit, Base Unit)

19.1. IC101


IC101
1 SUBVCO
2 VDDRFVCO
3 GNDRFVCO
4 GNDRFPA
5 VDDRFPA
6 GNDRFPA
7 GNDRFPO
8 RFION
9 RFIOP
10 GNDRFIO
11 GNDRFSUB
12 ESDRING
13 VDDRFLNA
14 GNDPABIAS
15 RVIAS
16 ROCS
17 COSC
18 GNDBIAS
19 VDDBIAS
20 GNDMx
21 VDDMx
22 VDDAF
23 GNDAF
24 TP3
25 VDDSCFAD
26 GNDSCFAD
27 VREFADP
28 VREFADN
29 SOFT_DIG_VDD
30 SPIDOUT
31 SPIDIN
32 SOFT_DIG_GND
33 TXENOUT
34 SPICLK
35 SPIENB
36 TP4
37 PWRDWN
38 TP5
39 VDDPAD
40 GNDPAD
41 SUBPAD
42 TP6
43 RXENOUT
44 PCMBCLK
45 PCMSYNC
46 RXADPCM
47 TXADPCM
48 TP7
49 IRQ
50 TESTEN
51 SUBDMD
52 GNDDMD
53 VDDDMD
54 LOA
55 BATMON
56 VDDXO
57 XTALIN
58 XTALO
59 GNDXO
60 TP8
61 GNDSYN
62 VDDSYN
63 PLLRC
64 PLLVR

Pin	Description	I/O
1	SUBVCO	GND
2	VDDRFVCO	VCC
3	GNDRFVCO	GND
4	GNDRFPA	GND
5	VDDRFPA	VCC
6	GNDRFPA	GND
7	GNDRFPO	GND
8	RF ION	I/O
9	RF IOP	I/O
10	GNDRFIO	GND
11	GNDRFSUB	GND
12	ESDRING	GND
13	VDDRFLNA	VCC
14	GNDPABIAS	GND
15	RBIAS	I
16	ROCS	I
17	COSC	I
18	GNDBIAS	GND
19	VDDBIAS	VCC
20	GNDMX	GND
21	VDDMX	VCC
22	VDDAF	VCC
23	GNDAF	GND
24	TP3	O
25	VDDSCFAD	VCC
26	GNDSCFAD	GND
27	VREFADP	VCC
28	VREFADN	I
29	SOFT_DIG_VDD	VCC
30	SPIDOUT	D.O
31	SPIDIN	D.I
32	SOFT_DIG_GND	GND

Pin	Description	I/O
33	TXENOUT	D.O
34	SPICLK	D.I
35	SPIENB	D.I
36	RESET	D.I
37	PWRDWN	D.I
38	MCLKOUT	O
39	VDDPAD	VCC
40	GNDPAD	GND
41	SUBPAD	GND
42	TP6	D.O
43	RXENOUT	D.O
44	PCMBCLK	D.O
45	PCMSYNC	D.O
46	RXADPCM	D.O
47	TXADPCM	D.I
48	TP7	D.O
49	IRQ	D.O
50	TESTEN	D.I
51	XUBDMD	GND
52	GNDDMD	GND
53	VDDDMD	VCC
54	LQA	D.O
55	BATMON	I
56	VDDXO	VDD
57	XTALIN	I
58	XTALO	O
59	GNDXO	GND
60	TP8	D.I
61	GNDSYN	GND
62	VDDSYN	VCC
63	PLLRC	O
64	PLLVR	I

20. HOW TO REPLACE FLAT PACKAGE IC

20.1. Preparation

- SOLDER

Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

- Soldering iron

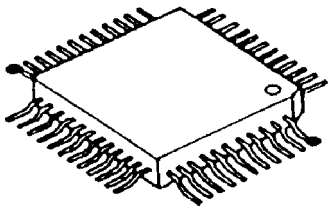
Recommended power consumption will be between 30 W to 40 W.
Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)
(An expert may handle between 60 W to 80 W iron, but beginner might damage foil by overheating.)

- Flux

HI115 Specific gravity 0.863
(Original flux will be replaced daily.)

20.2. Procedure

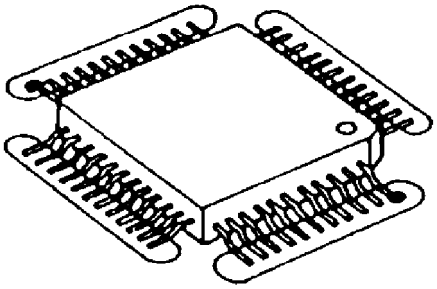
1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.

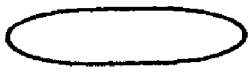


● - - - - - - Temporary soldering point.

***Most important matter is accurate setting of IC to the corresponding soldering foil.**

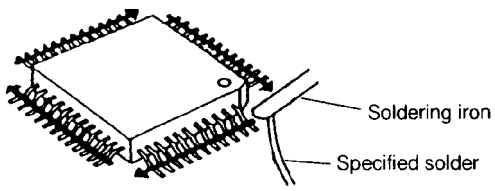
2. Apply flux for all pins of FLAT PACKAGE IC.





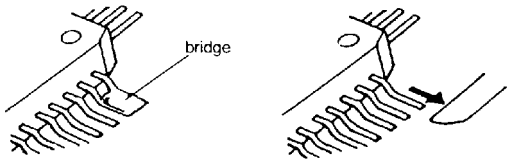
- - - - - - Flux

3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.

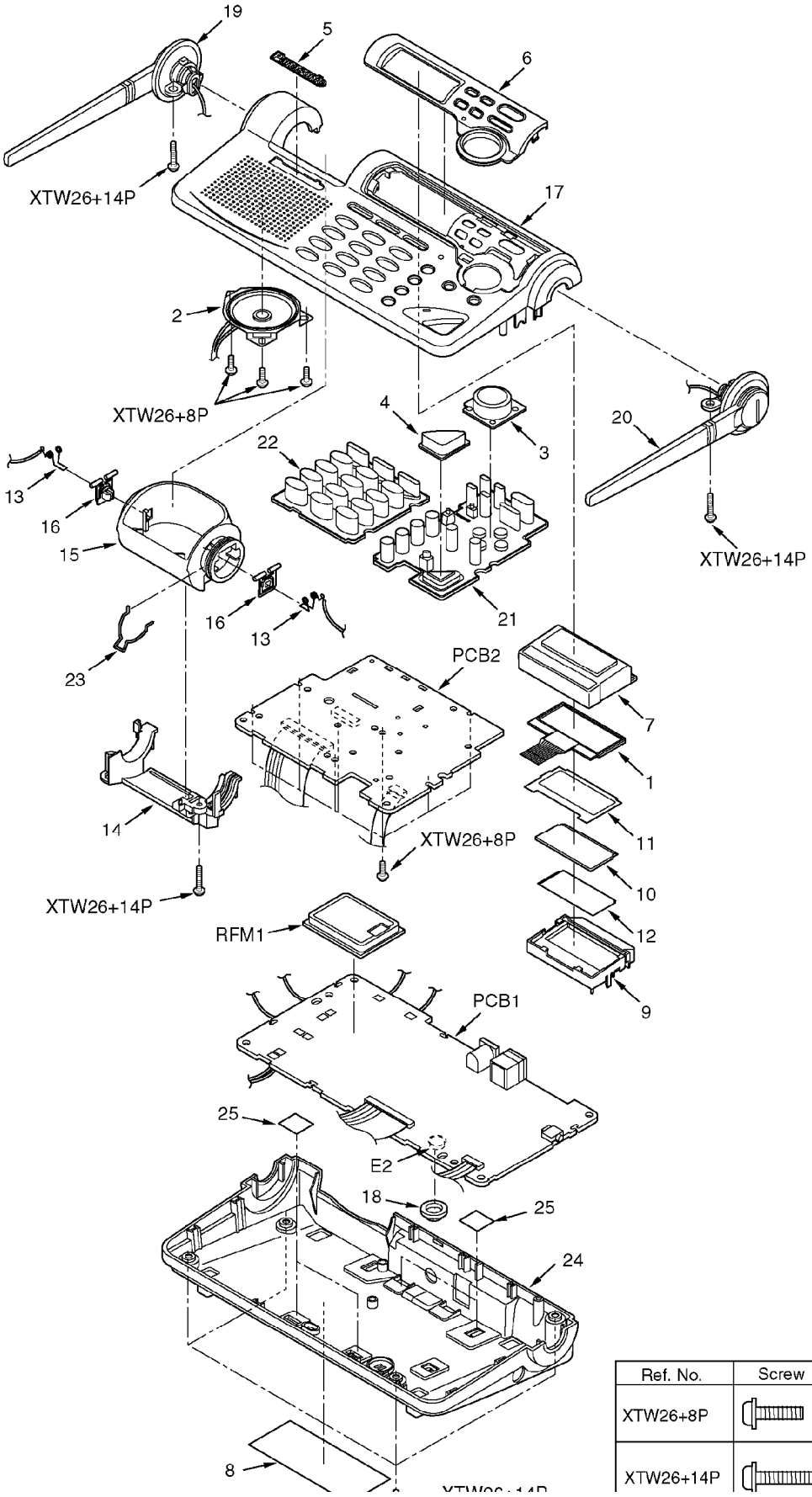


20.3. Modification Procedure of Bridge

1. **Re-solder slightly on bridged portion.**
2. **Remove remained solder along pins employing soldering iron as shown in below figure.**

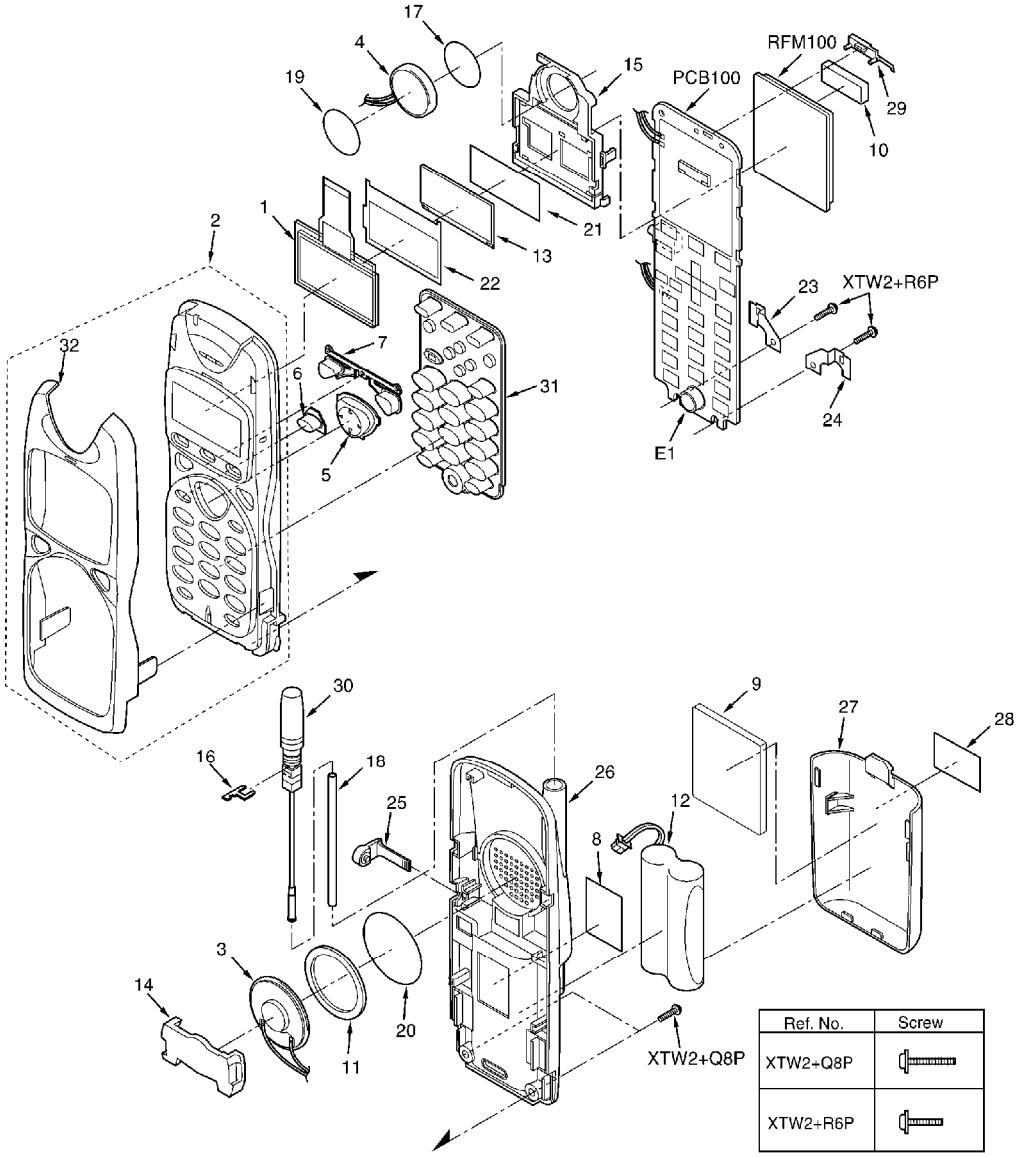


21. CABINET AND ELECTRICAL PARTS (Base Unit)

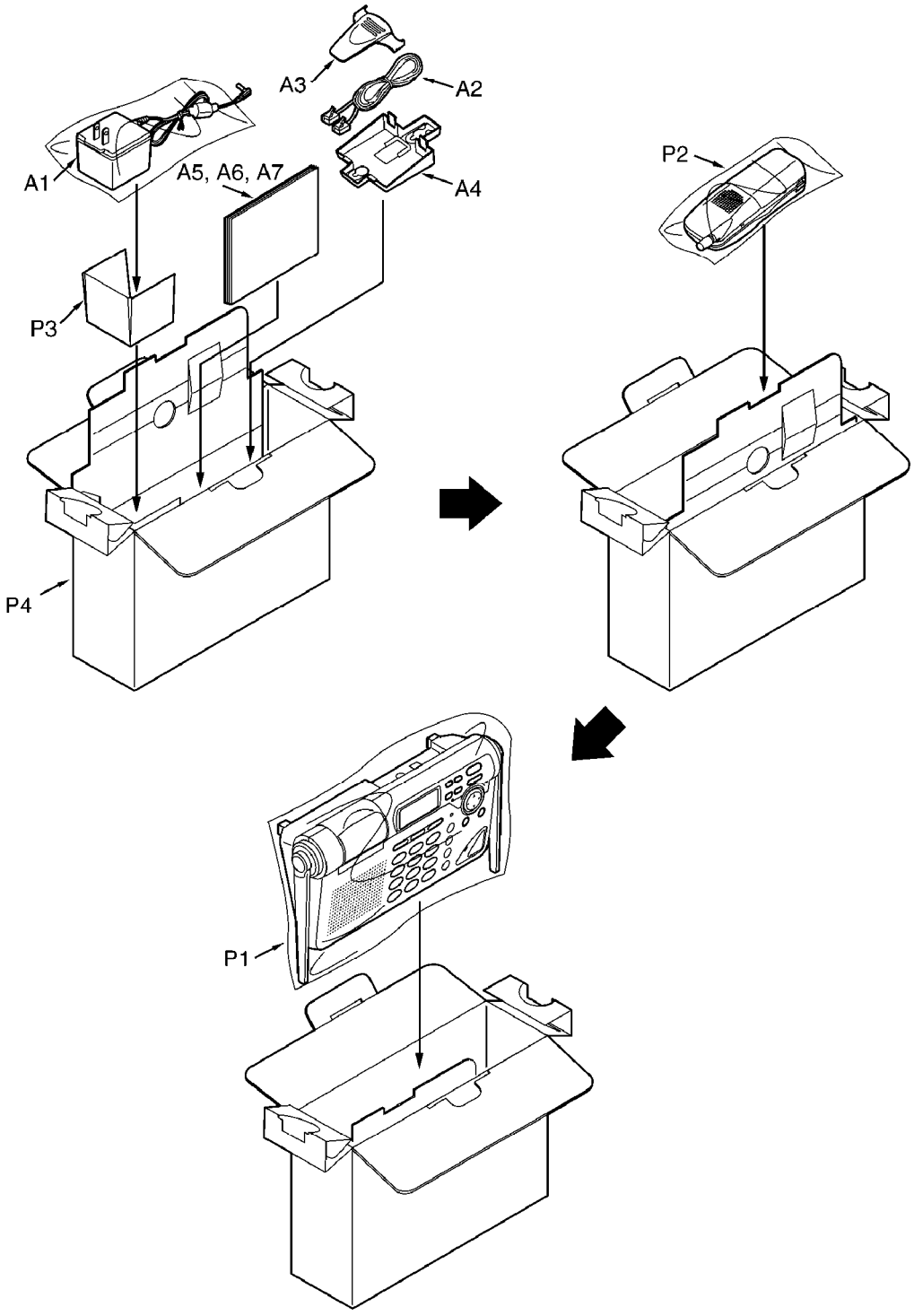


Ref. No.	Screw
XTW26+8P	
XTW26+14P	

22. CABINET AND ELECTRICAL PARTS (Handset)



23. ACCESSORIES AND PACKING MATERIALS



24. REPLACEMENT PARTS LIST

This replacement parts list are U.S.A. version only.

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention.
After the end of this period, the assembly will no longer be available.

2. **Important safety notice**
   Components identified by a ⚠ mark special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.
3. **The S mark indicates service standard parts and may differ from production parts.**
4. **RESISTORS & CAPACITORS**
   Unless otherwise specified;
   All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω
   All capacitors are in MICRO FARADS (μ F) P= μ μ F
   ***Type & Wattage of Resistor**

Type

ERC:Solid ERD:Carbon PQRD:Carbon	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :63V 2A :100V

24.1. Base Unit

24.1.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQADGP097A0	LIQUID CRYSTAL DISPLAY	
2	PQAS57P03Y	SPEAKER	
3	PQBC10310Z1	NAVIGATOR BUTTON	S
4	PQBC10311Z1	SP PHONE BUTTON	S
5	PQGB7Y	BADGE	
6	PQGG10117X1	GRILLE	S
7	PQGP10171Z1	LCD PANEL	S
8	PQGT14588Z	NAME PLATE	
9	PQHR10785Z	LCD HOLDER	
10	PQHR10787Z	LCD PLATE	
11	PQHX10961Z	LCD COVER SHEET	
12	PQHX10989Z	REFLECTOR SHEET	
13	PQJT10170Z	CHARGE TERMINAL	
14	PQKE10112Z1	CHARGE CASE HOLDER	S
15	PQKE10107X1	CHARGE CASE	S
16	PQKE10111Z1	CHARGE TERMINAL CASE	S
17	PQKM10460W1	UPPER CABINET	S
18	PQMG10025Z	CUSHION, RUBBER (MIC)	
19	PQSA10109Z	ANTENNA	
20	PQSA10110Z	ANTENNA	
21	PQSX10162Z	FUNCTION KEY	
22	PQSX10153Z	12 KEY RUBBER SWITCH	
23	PQUS10263Z	CRICK SPRING	
24	PQYF10182X1	LOWER CABINET	S
25	PQHS10466Z	HIMERON TAPE	

24.1.2. MAIN P.C. BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP1G2680NH	MAIN P.C. BOARD ASS'Y (RTL)	
		(ICS)	
IC301	PQVIXCF4502P	IC	
IC302	PQVINJM2360M	IC	
IC331	PQVIPS3432UT	IC	
IC501	PQVI16569AEA	IC	
IC751	PQWI2G2680NH	IC	
IC752	PQVITC7S08FU	IC	
IC753	PQVISPM3204T	IC	
IC754	PQVITC7W74U	IC	
IC755	PQVIBU4053BC	IC	
		(TRANSISTORS)	
Q101	2SD1819A	TRANSISTOR(SI)	
Q115	2SD1819A	TRANSISTOR(SI)	
Q121	2SA1625	TRANSISTOR(SI)	
Q122	PQVT2N6517CA	TRANSISTOR(SI)	
Q131	2SC2120	TRANSISTOR(SI)	
Q302	PQVTXP132A11	TRANSISTOR(SI)	
Q304	2SD1664Q	TRANSISTOR(SI)	
Q321	2SD1994A	TRANSISTOR(SI)	

Ref. No.	Part No.	Part Name & Description	Remarks
Q341	2SD1819A	TRANSISTOR(SI)	
Q342	2SD1819A	TRANSISTOR(SI)	
Q343	2SD1819A	TRANSISTOR(SI)	
Q371	2SD2136	TRANSISTOR(SI)	
Q381	2SD1819A	TRANSISTOR(SI)	
Q445	2SD1819A	TRANSISTOR(SI)	
Q461	2SD1819A	TRANSISTOR(SI)	
Q601	2SD1664Q	TRANSISTOR(SI)	
Q725	2SD601A	TRANSISTOR(SI)	
Q751	UN5213	TRANSISTOR(SI)	S
Q752	2SD1758Q	TRANSISTOR(SI)	
Q753	PQVTDTC114EU	TRANSISTOR(SI)	
Q754	PQVTDTC143E	TRANSISTOR(SI)	
Q755	UN5213	TRANSISTOR(SI)	S
		(DIODES)	
D101	PQVDS1ZB60F1	DIODE(SI)	
D103	MA111	DIODE(SI)	
D121	PQVDRLZ20A	DIODE(SI)	
D122	PQVDRLZ2R0	DIODE(SI)	
D201	MA111	DIODE(SI)	
D202	MA111	DIODE(SI)	
D302	PQVDSS24	DIODE(SI)	
D306	PQVDHRU0302A	DIODE(SI)	
D313	MA8047	DIODE(SI)	
D314	MA8043	DIODE(SI)	
D315	PQVDHRU0302A	DIODE(SI)	
D321	MA8056H	DIODE(SI)	
D331	MA8036H	DIODE(SI)	
D350	MA8051	DIODE(SI)	
D371	MA111	DIODE(SI)	
D376	MA8220	DIODE(SI)	
D377	MA8220	DIODE(SI)	
D445	MA153	DIODE(SI)	
D511	PQVDHRU0203A	DIODE(SI)	
D514	MA111	DIODE(SI)	
D515	MA111	DIODE(SI)	
D715	MA111	DIODE(SI)	
D716	MA111	DIODE(SI)	
D717	MA111	DIODE(SI)	
D719	MA111	DIODE(SI)	
D720	MA111	DIODE(SI)	
D721	MA8051	DIODE(SI)	
D722	MA8051	DIODE(SI)	
D723	MA8033	DIODE(SI)	
		(BATTERY TERMINALS)	
G601	PQJT10152Z	BATTERY TERMINAL	
G602	PQJT10152Z	BATTERY TERMINAL	
G603	PQJT10152Z	BATTERY TERMINAL	
G604	PQJT10152Z	BATTERY TERMINAL	
G605	PQJT10152Z	BATTERY TERMINAL	

Ref. No.	Part No.	Part Name & Description	Remarks
G606	PQJT10152Z	BATTERY TERMINAL	
		(COILS)	
L101	PQLQXF330K	COIL	
L102	PQLQXF330K	COIL	
L302	PQLE139	COIL	
L350	PQLQXF100K	COIL	
L372	PQLQR2K1A102	COIL	
L373	PQLQR2K1A102	COIL	
L374	PQLQR2K1A102	COIL	
L375	PQLQR2K1A102	COIL	
L376	PQLQXF3R3K	COIL	
L377	PQLQXF3R3K	COIL	
L515	PQLQR2K1A102	COIL	
L715	PQLQR2K1A102	COIL	
L716	PQLQR2KA213	COIL	
L901	PQLQR2KA213	COIL	
L902	PQLQR2KA213	COIL	
L904	PQLQR2KA213	COIL	
L906	PQLQR2KA213	COIL	
		(JACKS)	
CN101	PQJJ1T008X	JACK/SOCKET	
CN102	PQJJ1T022Z	JACK/SOCKET	
CN701	PQJJ1C001Z	JACK/SOCKET	
		(VARISTORS)	
SA101	PQVDDSS301L	VARISTOR	!
SA102	PQVDDSS301L	VARISTOR	!
		(CONNECTORS)	
CN702	PQJS30B37Z	CONNECTOR	
CN703	PQJS04B37Z	CONNECTOR	
		(OTHERS)	
E1	PQJE10107Z	CONNECTOR	
E2	PQJM150Z	MICROPHONE	
E3	PQJE10108Z	CONNECTOR	
P101	PQRPAR390N	THERMISTOR	S
RA702	EXRV8V221JV	RESISTOR ALLAY	
X501	PQVCK4096N9Z	CRYSTAL OSCILLATOR	
		(RESISTORS)	
R103	ERJ3GEYJ104	100k	
R104	ERJ3GEYJ104	100k	
R106	ERJ3GEYJ472	4.7k	
R107	ERJ3GEYJ473	47k	
R111	ERJ3GEYJ394	390k	

Ref. No.	Part No.	Part Name & Description	Remarks
R112	ERJ3GEYJ394	390k	
R113	ERJ3GEYJ472	4.7k	
R115	ERJ3GEYJ125	1.2M	
R116	ERDS1VJ106	10M	
R117	ERJ3GEYJ335	3.3M	
R121	ERJ3GEYJ104	100k	
R122	ERJ3GEYJ103	10k	
R123	ERJ3GEYJ153	15k	
R124	ERJ3GEYJ473	47k	
R128	ERJ3GEYJ103	10k	
R131	ERJ3GEYJ393	39k	
R132	ERJ3GEYJ222	2.2k	
R136	ERDS1TJ330	33	S
R138	ERJ3GEYJ470	47	
R139	ERJ3GEYJ122	1.2k	
R140	ERJ3GEYJ152	1.5k	
R201	ERJ3GEYJ103	10k	
R202	ERJ3GEY0R00	0	
R203	ERJ3GEY0R00	0	
R313	ERJ3GEYJ221	220	
R314	ERJ3GEYJ221	220	
R315	ERX1SJR15	0.15	
R316	ERJ3GEYJ102	1k	
R317	ERJ3GEYF123	12k	
R318	ERJ3GEYF473	47k	
R319	ERJ3GEY0R00	0	
R320	ERDS1TJ331	330	S
R321	ERJ3GEYJ820	82	
R322	ERJ3GEYJ471	470	
R331	ERJ3GEYJ273	27k	
R332	ERJ3GEYJ683	68k	
R333	ERJ3GEYJ103	10k	
R335	ERJ3GEYJ561	560	
R336	ERJ3GEYJ563	56k	
R341	ERJ3GEYJ473	47k	
R342	ERJ3GEYJ224	220k	
R344	ERJ3GEYJ104	100k	
R345	ERJ3GEYJ224	220k	
R371	ERJ3GEYJ121	120	
R372	ERJ3GEYJ561	560	
R373	ERJ3GEYJ180	18	
R374	ERJ3GEYJ180	18	
R375	ERJ3GEYJ180	18	
R376	ERJ3GEYJ180	18	
R377	ERDS1TJ820	82	S
R378	ERDS1TJ820	82	S
R381	ERJ3GEYJ563	56k	
R382	ERJ3GEYJ223	22k	
R383	ERJ3GEYJ102	1k	
R384	ERJ3GEYJ104	100k	
R385	ERJ3GEY0R00	0	
R386	ERJ3GEYJ102	1k	
R411	ERJ3GEYJ394	390k	
R412	ERJ3GEYJ394	390k	

Ref. No.	Part No.	Part Name & Description	Remarks
R413	ERJ3GEYJ103	10k	
R414	ERJ3GEYJ103	10k	
R415	ERJ3GEYJ273	27k	
R431	ERJ3GEYJ222	2.2k	
R442	ERJ3GEYJ103	10k	
R443	ERJ3GEYJ153	15k	
R444	ERJ3GEYJ332	3.3k	
R445	ERJ3GEYJ563	56k	
R446	ERJ3GEYJ105	1M	
R447	ERJ3GEYJ221	220	
R448	ERJ3GEYJ332	3.3k	
R450	ERJ3GEYJ152	1.5k	
R461	ERJ3GEYJ150	15	
R462	ERJ3GEYJ392	3.9k	
R464	ERJ3GEYJ474	470k	
R465	ERJ3GEYJ390	39	
R466	ERJ3GEY0R00	0	
R501	ERJ3GEYJ105	1M	
R502	ERJ3GEYJ331	330	
R601	ERJ3GEY0R00	0	
R705	ERJ3GEYJ101	100	
R706	ERJ3GEYJ101	100	
R707	ERJ3GEYJ472	4.7k	
R722	ERJ3GEYJ392	3.9k	
R723	ERJ3GEYJ102	1k	
R724	ERJ3GEYJ562	5.6k	
R725	ERJ3GEYJ821	820	
R726	ERJ3GEYJ392	3.9k	
R727	ERJ3GEYJ274	270k	
R728	ERJ3GEYJ102	1k	
R730	ERJ3GEYJ821	820	
R731	ERJ3GEYJ221	220	
R732	ERJ3GEYJ102	1k	
R733	ERJ3GEYJ181	180	
R734	ERJ3GEYJ181	180	
R735	ERJ3GEYJ181	180	
R751	ERJ3GEYJ104	100k	
R752	ERJ3GEYJ104	100k	
R757	ERJ3GEYJ221	220	
R776	ERJ3GEYJ102	1k	
R777	ERJ3GEYJ102	1k	
R779	ERJ3GEYJ333	33k	
R780	ERJ3GEYJ103	10k	
R785	ERJ3GEYJ103	10k	
R786	ERJ3GEYJ104	100k	
R787	ERJ3GEYJ104	100k	
R789	ERJ3GEYJ473	47k	
L201	PQ4R10XJ000	0	S
L202	PQ4R10XJ000	0	S
L203	PQ4R10XJ000	0	S
L204	PQ4R10XJ000	0	S
L205	ERJ3GEY0R00	0	
L206	ERJ3GEY0R00	0	
L207	ERJ3GEY0R00	0	

Ref. No.	Part No.	Part Name & Description	Remarks
L208	ERJ3GEY0R00	0	
L209	ERJ3GEY0R00	0	
L210	ERJ3GEY0R00	0	
L211	ERJ3GEY0R00	0	
L212	ERJ3GEY0R00	0	
L213	ERJ3GEY0R00	0	
L214	ERJ3GEY0R00	0	
L215	ERJ3GEY0R00	0	
L216	ERJ3GEY0R00	0	
L217	ERJ3GEY0R00	0	
L218	ERJ3GEY0R00	0	
L219	ERJ3GEY0R00	0	
L511	PQ4R10XJ000	0	S
		(CAPACITORS)	
C101	ECKD2H681KB	680P	S
C102	ECKD2H681KB	680P	S
C103	PQCUV1H154KR	0.15	
C104	PQCUV1H154KR	0.15	
C106	PQCUV1A684KB	0.68	
C111	ECUV1H681JCV	680P	S
C112	ECUV1H681JCV	680P	S
C115	ECUV1H103KBV	0.01	
C121	ECUV1H103KBV	0.01	S
C122	ECUV1H070CCV	7P	
C123	ECUV1H070CCV	7P	
C131	ECUV1H070CCV	7P	
C132	ECUV1H103KBV	0.01	
C134	ECEA1HKA010	1	
C135	ECUV1H070CCV	7P	
C139	ECEA1CKS100	10	S
C140	ECUV1C473KBV	0.047	
C150	ECUV1H102KBV	0.001	
C151	ECUV1H103KBV	0.01	S
C152	ECUV1C104ZFV	0.1	
C160	ECUV1H070CCV	7P	
C161	ECUV1H070CCV	7P	
C162	ECUV1H070CCV	7P	
C163	ECUV1H070CCV	7P	
C302	ECUV1C104ZFV	0.1	
C303	ECUV1C104ZFV	0.1	
C304	ECEA0JU220	22	
C306	ECEA1AU471	470	
C312	ECEA0JKS101	100	
C313	ECUV1A105ZFV	1	
C314	ECEA0JKS470	47	
C315	ECUV1C104ZFV	0.1	
C316	EEUFC1E221	220	
C318	ECUV1H221JCV	220P	
C319	EEUFC1A471	470	
C320	ECUV1C104ZFV	0.1	
C321	ECEA1AU221	220	
C341	ECUV1H102KBV	0.001	

Ref. No.	Part No.	Part Name & Description	Remarks
C342	ECUV1H102KBV	0.001	
C344	ECUV1H681JCV	680P	S
C345	ECUV1C104KBV	0.1	
C371	ECUV1C104ZFV	0.1	
C372	ECUV1H471JCV	470P	S
C411	ECUV1H121JCV	120P	
C412	ECUV1A105ZFV	1	
C413	ECUV1H121JCV	120P	
C415	ECUV1A105ZFV	1	
C431	ECUV1H272KBV	0.0027	
C432	ECUV1C104KBV	0.1	
C433	ERJ3GEYJ822	8.2K	
C441	ECUV1A224KBV	0.22	
C442	ECUV1A224KBV	0.22	
C443	ECUV1H101JCV	100P	
C444	ECUV1C104KBV	0.1	
C445	ECEA1CKS100	10	S
C446	ECUV1H070CCV	7P	
C447	ECUV1H070CCV	7P	
C461	ECUV1C104ZFV	0.1	
C462	ECUV1H070CCV	7P	
C463	ECUV1C683KBV	0.068	
C464	ECUV1H070CCV	7P	
C467	ECUV1H070CCV	7P	
C501	ECEA0JU102	1000	
C502	ECUV1C104ZFV	0.1	
C503	ECUV1C104ZFV	0.1	
C504	ECUV1C104ZFV	0.1	
C505	ECUV1C104ZFV	0.1	
C506	ECUV1H100DCV	10P	S
C507	ECUV1H100DCV	10P	S
C511	ECEA1AU101	100	S
C512	ECUV1C104ZFV	0.1	
C515	ECEA0JU220	22	
C516	ECUV1C104ZFV	0.1	
C601	ECEA1AU221	220	S
C604	ECEA0JU471	470	
C607	ECUV1C104ZFV	0.1	
C700	ECUV1H681JCV	680P	S
C701	ECUV1H101JCV	100P	
C703	ECUV1H101JCV	100P	
C706	ECUV1H471JCV	470P	S
C707	ECUV1H471JCV	470P	S
C708	ECUV1H471JCV	470P	S
C709	ECUV1H471JCV	470P	S
C711	ECEA0JU331	330	
C715	EECW5R5D473	0.047	S
C719	ECUV1H680JCV	68P	
C720	ECUV1H680JCV	68P	
C722	ECEA1HKS4R7	4.7	S
C723	ECUV1H103KBV	0.01	S
C724	ECUV1A224KBV	0.22	
C725	ECUV1A224KBV	0.22	
C726	ECUV1C104KBV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C727	ECUV1H221JCV	220P	
C728	ECUV1H102KBV	0.001	
C729	ECUV1C104ZFV	0.1	
C730	ECUV1H221JCV	220P	
C736	ECUV1H221JCV	220P	
C737	ECUV1H221JCV	220P	
C738	ECUV1H221JCV	220P	
C739	ECUV1H221JCV	220P	
C740	ECUV1H221JCV	220P	
C741	ECUV1H471JCV	470P	S
C742	ECUV1H471JCV	470P	S
C743	ECUV1H471JCV	470P	S
C744	ECUV1H471JCV	470P	S
C745	ECUV1H471JCV	470P	S
C746	ECUV1H471JCV	470P	S
C747	ECUV1H471JCV	470P	S
C748	ECUV1H471JCV	470P	S
C750	ECUV1H471JCV	470P	S
C751	ECUV1H471JCV	470P	S
C753	ECUV1H680JCV	68P	
C754	ECUV1H680JCV	68P	
C755	ECUV1H680JCV	68P	
C756	ECUV1H680JCV	68P	
C757	ECUV1H680JCV	68P	
C759	ECUV1H1R5CCV	1.5	
C760	ECUV1H070CCV	7P	
C761	ECUV1H070CCV	7P	
C763	ECUV1H070CCV	7P	
C764	ECUV1H070CCV	7P	
C766	ECUV1H1R5CCV	1.5	
C767	ECUV1H1R5CCV	1.5	
C768	ECUV1H1R5CCV	1.5	
C769	ECUV1H1R5CCV	1.5	
C770	ECUV1H1R5CCV	1.5	
C771	ECUV1H1R5CCV	1.5	
C772	ECUV1H1R5CCV	1.5	
C773	ECUV1H1R5CCV	1.5	
C774	ECUV1H1R5CCV	1.5	
C775	ECUV1H1R5CCV	1.5	
C776	ECUV1H1R5CCV	1.5	
C777	ECUV1H1R5CCV	1.5	
C778	ECUV1H1R5CCV	1.5	
C781	ECEA0JKS220	22	S
C782	ECUV1C104KBV	0.1	
C785	ECUV1H470JCV	47P	
C786	ECUV1H330JCV	33P	
C787	ECUV1H330JCV	33P	
C788	ECUV1H471JCV	470P	S
C790	ECUV1A105ZFV	1	
C791	ECUV1H100DCV	10P	S
C792	ECUV1H100DCV	10P	S
C793	ECUV1C104ZFV	0.1	
C794	ECUV1C104ZFV	0.1	
C795	ECUV1H121JCV	120P	

Ref. No.	Part No.	Part Name & Description	Remarks
C796	ECUV1H0R5CCV	0.5	
C797	ECUV1H0R5CCV	0.5	
C798	ECUV1H0R5CCV	0.5	

24.1.3. OPERATIONAL P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP2G2680NH	OPERATIONAL P.C.BOARD ASS'Y(RTL)	
		(ICS)	
IC801	PQVIE3324F0E	IC	
IC802	PQVILC324265	IC	
IC803	PQWI1G2680HA	IC	
IC804	PQVIXCF3002P	IC	
		(TRANSISTORS)	
Q801	PQVTDTA143EU	TRANSISTOR(SI)	
Q802	PQVTDTA143EU	TRANSISTOR(SI)	
Q803	PQVTDTC143E	TRANSISTOR(SI)	
Q804	PQVTDTC143E	TRANSISTOR(SI)	
Q805	PQVTDTC143E	TRANSISTOR(SI)	
Q811	2SD1819A	TRANSISTOR(SI)	
		(DIODES)	
D801	MA111	DIODE(SI)	
D802	MA111	DIODE(SI)	
D850	MA111	DIODE(SI)	
		(LEDS)	
LED801	PQVDFA1105W	LED	
LED802	PQVDFA1105W	LED	
LED803	PQVDFA1105W	LED	
LED804	LNJ211R8ARU	LED	
LED805	LNJ211R8ARU	LED	
LED806	LNJ211R8ARU	LED	
LED811	PQVDHPY1105W	LED	
LED812	PQVDHPY1105W	LED	
LED813	PQVDHPY1105W	LED	
		(CONNECTOR)	
CN801	PQJS30B37Z	CONNECTOR	
CN802	PQJS22B11Z	CONNECTOR	
CN803	PQJS04B37Z	CONNECTOR	
		(CRYSTAL OSCILLATOR)	
X801	PQVCF2700N5Z	CRYSTAL OSCILLATOR	

Ref. No.	Part No.	Part Name & Description	Remarks
		(RESISTORS)	
R801	ERJ3GEYJ221	220	
R802	ERJ3GEYJ181	180	
R803	ERJ3GEYJ221	220	
R804	ERJ3GEYJ181	180	
R805	ERJ3GEYJ221	220	
R806	ERJ3GEYJ181	180	
R807	ERJ3GEYJ561	560	
R808	ERJ3GEYJ561	560	
R809	ERJ3GEYJ561	560	
R810	ERJ3GEYF824	820k	
R811	ERJ3GEYF434	430k	
R812	ERJ3GEYJ100	10	
R813	ERJ3GEYJ104	100k	
R814	ERJ3GEYJ100	10	
R815	ERJ3GEYJ102	1k	
R816	ERJ3GEYJ331	330	
R817	ERJ3GEYJ103	10k	
R818	ERJ3GEYJ103	10k	
R819	ERJ3GEYJ103	10k	
R820	ERJ3GEYJ153	15k	
R822	ERJ3GEYJ331	330	
R823	ERJ3GEYJ331	330	
R824	ERJ3GEYJ331	330	
R836	ERJ3GEY0R00	0	
R837	ERJ3GEY0R00	0	
R839	ERJ3GEY0R00	0	
R851	ERJ3GEYJ330	33	
R854	ERJ3GEY0R00	0	
R855	ERJ3GEY0R00	0	
R857	ERJ3GEYJ331	330	
R858	ERJ3GEYJ331	330	
R859	ERJ3GEY0R00	0	
R860	ERJ3GEYJ392	3.9k	
R861	ERJ3GEYJ391	390	
R864	ERJ3GEY0R00	0	
R866	ERJ3GEYJ104	100k	
R870	ERJ3GEY0R00	0	
R871	ERJ3GEYJ820	82	
R872	ERJ3GEY0R00	0	
		(CAPACITORS)	
C801	ECUV1A474KBV	0.47	
C802	ECUV1C104ZFV	0.1	
C803	ECUV1C104ZFV	0.1	
C804	ECUV1C104ZFV	0.1	
C805	ECUV1C104ZFV	0.1	
C806	ECUV1C104ZFV	0.1	
C807	ECUV1A474KBV	0.47	
C808	ECUV1A474KBV	0.47	
C811	ECST0JZ106R	10	
C812	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C813	ECUV1C104ZFV	0.1	
C814	ECUV1C104ZFV	0.1	
C815	ECUV1C104ZFV	0.1	
C816	ECST0JZ106R	10	
C817	ECUV1C104ZFV	0.1	
C818	ECUV1C104ZFV	0.1	
C819	ECUV1C104ZFV	0.1	
C820	ECST0JZ106R	10	
C821	ECUV1C104ZFV	0.1	
C822	ECUV1H220JCV	22P	
C823	ECUV1H220JCV	22P	
C824	ECUV1C104ZFV	0.1	
C825	ECUV1C104ZFV	0.1	
C826	ECUV1C104ZFV	0.1	
C827	ECUV1C104ZFV	0.1	
C828	ECUV1C104ZFV	0.1	
C831	ECUV1H103KBV	0.01	S
C832	ECUV1C104ZFV	0.1	
C833	ECUV1C104ZFV	0.1	
C834	ECUV1C104KBV	0.1	
C835	ECUV1C104KBV	0.1	
C836	ECUV1C104KBV	0.1	
C837	ECUV1C104KBV	0.1	
C838	ECUV1H102KBV	0.001	
C839	ECUV1C104ZFV	0.1	
C850	ECST0JZ106R	10	
C851	ECUV1C104ZFV	0.1	
C862	ECUV1A105ZFV	1	
C870	ECUV1H471JCV	470P	S

24.1.4. RF UNIT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
RFM1	PQLP10237Z	RF BLOCK	

24.2. Handset

24.2.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQADGP096B0	LIQUID CRYSTAL DISPLAY	
2	PQYMTG2680NR	FRONT CABINET ASS'Y	
3	PQAS3P07Y	SPEAKER	
4	PQAS15P01Z	SPEAKER	
5	PQBC10313Z1	NAVIGATOR BUTTON	S
6	PQBC10314Z1	SP PHONE BUTTON	S
7	PQBX10343Z1	FUNCTION BUTTON	S
8	PQGT14589Z	NAME PLATE	
9	PQHE10119Z	CUSHION	
10	PQHG10610Z	CUSHION	
11	PQHG10589Y	SP RUBBER SHEET	
12	PQHHR150SVC	BATTERY	S
13	PQHR10781Z	LCD PLATE	
14	PQHR10778Z	SP HOLDER	
15	PQHR10779Z	LCD HOLDER	
16	PQHR10839Z	ANTENNA HOLDER	
17	PQHR10834Z	RECEIVER HOLDER	
18	PQHR10840Z	ANTENNA COVER	
19	PQHS10458Z	SPEAKER NET	
20	PQHS10457Z	SPEAKER NET	
21	PQHX10963Y	LCE REFRECTOR SHEET	
22	PQHX10962Z	LCD COVER SHEET	
23	PQJT10168Y	CHARGE TERMINAL (L)	
24	PQJT10169Y	CHARGE TERMINAL (R)	
25	PQKE10108Z1	E/P CAP	S
26	PQKF10494Z1	REAR CABINET	S
27	PQKK10108Z1	BATTERY COVER	S
28	PQQT22128Y	CHARGE LABEL	
29	PQSA10114Z	ANTENNA	
30	PQSA10111X	ANTENNA	
31	PQSX10155Z	RUBBER SWITCH	
32	PQGG10114Z1	GRILLE	S

24.2.2. MAIN P.C. BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPTG2680NR	MAIN P.C.BOARD ASS'Y(RTL)	
		(IC)	
IC201	PQVI16107AGA	IC	
IC202	PQWITG2680NR	IC	
IC203	PQVIC61CC20N	IC	
IC204	PQVIXCR3302M	IC	
IC205	PQVIC61CC22N	IC	
IC206	PQVIC68B102M	IC	
IC207	PQVIMM1385EN	IC	
IC208	PQVINJM2135R	IC	
		(TRANSISTORS)	
Q201	PQVTDTC143E	TRANSISTOR(SI)	
Q202	PQVTDTC143E	TRANSISTOR(SI)	
Q203	PQVTDTA143TU	TRANSISTOR(SI)	
Q204	2SA1797Q	TRANSISTOR(SI)	
Q205	2SD1819A	TRANSISTOR(SI)	
Q206	PQVTDTC143E	TRANSISTOR(SI)	
Q207	2SD1819A	TRANSISTOR(SI)	
Q211	PQVTDTA143TU	TRANSISTOR(SI)	
Q213	PQVTDTC143E	TRANSISTOR(SI)	
Q214	PQVTXP151A13	TRANSISTOR(SI)	
Q216	2SD1819A	TRANSISTOR(SI)	
		(DIODES)	
D201	MA2ZD1400	DIODE(SI)	
D202	MA2ZD1400	DIODE(SI)	
D204	MA2ZD1400	DIODE(SI)	
D205	PQVDPTZTE25	DIODE(SI)	S
D209	MA111	DIODE(SI)	
D211	MA8150	DIODE(SI)	
D214	MA8150	DIODE(SI)	
D215	MA8150	DIODE(SI)	
D216	PQVDEP10LA03	DIODE(SI)	
D217	PQVDEC10	DIODE(SI)	
D218	MA8150	DIODE(SI)	
D219	MA8150	DIODE(SI)	
D221	MA111	DIODE(SI)	
D222	MA111	DIODE(SI)	
		(LEDS)	
LED201	PQVDSML310MT	LED	
LED202	PQVDSML310MT	LED	
LED203	PQVDSML310MT	LED	
LED204	PQVDSML310MT	LED	
LED208	PQVDBR1111C	LED	S
LED210	LNJ115W8PRA	LED	
LED211	LNJ115W89RA	LED	
LED212	LNJ115W89RA	LED	

Ref. No.	Part No.	Part Name & Description	Remarks
LED213	LNJ115W89RA	LED	
		(CONNECTORS)	
CN201	PSJS22A62Z	CONNECTOR	
CN202	PSJP02A44Z	CONNECTOR	
		(COILS)	
L203	PQLQR3FL121	COIL	
L204	PQLQR3FL121	COIL	
L205	PQLQR3FL121	COIL	
L209	PQLE1G5K3220	COIL	
L300	PQLQR4T151M	COIL	
L301	PQLQR4T151M	COIL	
		(OTHERS)	
E1	PQJM150Z	MICROPHONE	
CN203	PQJJ1C002Z	JACK/SOCKET	
X201	PQVCI4096N3Z	CRYSTAL OSCILLATOR	
G701	PQMH10424Z	PLATE, METAL	
G702	PQMH10424Z	PLATE, METAL	
G703	PQMH10424Z	PLATE, METAL	
G704	PQMH10424Z	PLATE, METAL	
G705	PQMH10424Z	PLATE, METAL	
G706	PQMH10424Z	PLATE, METAL	
		(RESISTORS)	
R201	ERJ3GEYJ101	100	
R202	ERJ3GEYJ101	100	
R203	ERJ3GEYJ101	100	
R204	ERJ3GEYJ101	100	
R205	ERJ3GEYJ151	150	
R206	ERJ3GEYJ151	150	
R207	ERJ3GEYJ151	150	
R209	ERJ3GEYJ104	100k	
R210	ERJ3GEYJ104	100k	
R211	ERJ3GEYJ104	100k	
R212	ERJ3GEYJ101	100	
R213	ERJ3GEYJ101	100	
R214	ERJ3GEYJ331	330	
R215	ERJ3GEYJ101	100	
R216	ERJ3GEYJ331	330	
R217	ERJ3GEYF434	430k	
R218	ERJ3GEYF824	820k	
R220	ERJ3GEYJ474	470k	
R221	ERJ3GEYJ103	10k	
R222	ERJ3GEYJ101	100	
R223	ERJ3GEY0R00	0	
R224	ERJ3GEYJ103	10k	
R225	ERJ3GEYJ472	4.7k	
R226	ERJ3GEYJ123	12k	
R227	ERJ3GEYJ473	47k	

Ref. No.	Part No.	Part Name & Description	Remarks
R228	ERJ3GEYJ224	220k	
R229	ERJ3GEYJ102	1k	
R230	ERJ3GEYJ102	1k	
R231	ERJ3GEYJ102	1k	
R232	ERJ3GEYJ103	10k	
R234	ERJ3EKF2204	2.2M	
R235	ERJ3EKF2204	2.2M	
R236	ERJ3GEYJ104	100k	
R244	ERJ3GEYJ104	100k	
R245	ERJ3GEYJ103	10k	
R246	ERJ3GEYJ393	39k	
R247	ERJ3GEYJ391	390	
R248	ERJ3GEYJ393	39k	
R249	ERJ3GEYJ222	2.2k	
R250	ERJ3GEYJ222	2.2k	
R251	ERJ3GEYJ101	100	
R253	ERJ3GEYJ222	2.2k	
R265	ERJ3GEYJ103	10k	
R272	ERJ3GEYJ120	12	
R273	ERJ3GEYJ120	12	
R274	ERJ3GEYJ120	12	
R275	ERJ3EKF2203	220k	S
R276	ERJ3GEYF104	100k	
R279	ERJ3GEYF473	47k	
R280	ERJ3GEYJ180	18	
R281	ERJ3GEYJ180	18	
R284	ERJ3GEY0R00	0	
R285	ERJ3GEY0R00	0	
R286	ERJ3GEYJ224	220k	
R287	ERJ3GEYJ104	100k	
R288	ERJ3GEY0R00	0	
R289	ERJ3GEYJ683	68k	
R291	ERJ3GEYJ823	82k	
C204	ERJ3GEYJ104	100k	
C274	ERJ3GEYJ682	6.8k	
L202	ERJ3GEY0R00	0	
L206	ERJ3GEY0R00	0	
		(CAPACITORS)	
C203	ECUV1C104ZFV	0.1	
C205	ECUV1H101JCV	100P	
C206	ECUV1C104KBV	0.1	
C207	ECUV1C104KBV	0.1	
C208	ECUV1C104KBV	0.1	
C209	ECUV1C104KBV	0.1	
C210	ECUV1C104KBV	0.1	
C211	ECUV1A474KBV	0.47	
C212	ECUV1A474KBV	0.47	
C213	ECEV0JBS221P	220	
C214	ECUV1C104ZFV	0.1	
C215	ECUV1A474KBV	0.47	
C217	ECUV1C104ZFV	0.1	
C218	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C219	ECUV1H470JCV	47P	
C220	ECST0JC107	100	
C221	ECUV1C104ZFV	0.1	
C222	ECUV1C104ZFV	0.1	
C223	ECST0JZ106R	10	
C224	ECUV1C104ZFV	0.1	
C225	ECST0JY475	4.7	
C226	ECUV1C104ZFV	0.1	
C227	ECUV1H470JCV	47P	
C228	ECUV1H103KBV	0.01	
C229	ECUV1C104ZFV	0.1	
C230	ECUV1C104KBV	0.1	
C231	ECUV1A224KBV	0.22	
C232	ECUV1C104KBV	0.1	
C233	ECUV1C104ZFV	0.1	
C234	ECUV1C104ZFV	0.1	
C236	ECUV1H060DCV	6P	S
C237	ECUV1H060DCV	6P	S
C238	ECEV0JBS221P	220	
C239	ECUV1H103KBV	0.01	
C249	ECST0GY226	22	
C250	ECUV1A105ZFV	1	
C255	ECUV1C104ZFV	0.1	
C267	ECST0JX226	22	
C277	ECUV1H102KBV	0.001	
C280	ECUV1C104ZFV	0.1	
C284	ECUV1H100DCV	10P	
C286	ECUV1H100DCV	10P	
C287	ECUV1C104ZFV	0.1	
C288	ECUV1H100DCV	10P	
C289	ECST0JY475	4.7	
C291	ECST0JTPB337	330	
C292	ECST0JC107	100	
C293	ECUV1H182KBV	0.0018	
C294	ECUV1H103KBV	0.01	S
C295	ECUV1H102KBV	0.001	
C297	ECUV1H100DCV	10P	
C299	ECUV1H100DCV	10P	
C302	ECUV1C104ZFV	0.1	
C303	ECUV1H471JCV	470P	S
C304	ECUV1C104KBV	0.1	
C305	ECUV1A105ZFV	1	
C306	ECST0JZ106R	10	
C307	ECUV1H070CCV	7P	
C310	ECUV1H103KBV	0.01	S
R290	ECUV1H070CCV	7P	

24.2.3. RF UNIT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
RFM100	PQLP10238Z	RF BLOCK	

24.2.4. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQWATG2650N	AC ADAPTOR	⚠
A2	PQJA10075Z	TEL CORD	
A3	PQKE10109Z1	BELT CLIP	S
A4	PQKL10038Z1	WALL MOUNT ADAPTOR	S
A5	PQQW12349Z	QUICK GUIDE (ENGLISH)	
A6	PQQW12350Z	QUICK GUIDE (SPANISH)	
A7	PQQX12942Z	INSTRUCTION BOOK	
P1	PQPP170Y	PROTECTION COVER (BASE UNIT)	
P2	XZB10X35A02	PROTECTION COVER (HANDSET)	
P3	PQPD10440Y	CUSHION	
P4	PQPK13361Z	GIFT BOX	

25. FOR SCHEMATIC DIAGRAM

25.1. Base Unit (SCHEMATIC DIAGRAM (Base Unit))

Notes:

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

This schematic diagram may be modified at any time with the development of new technology.

25.2. Handset (SCHEMATIC DIAGRAM (Handset))

Notes:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.

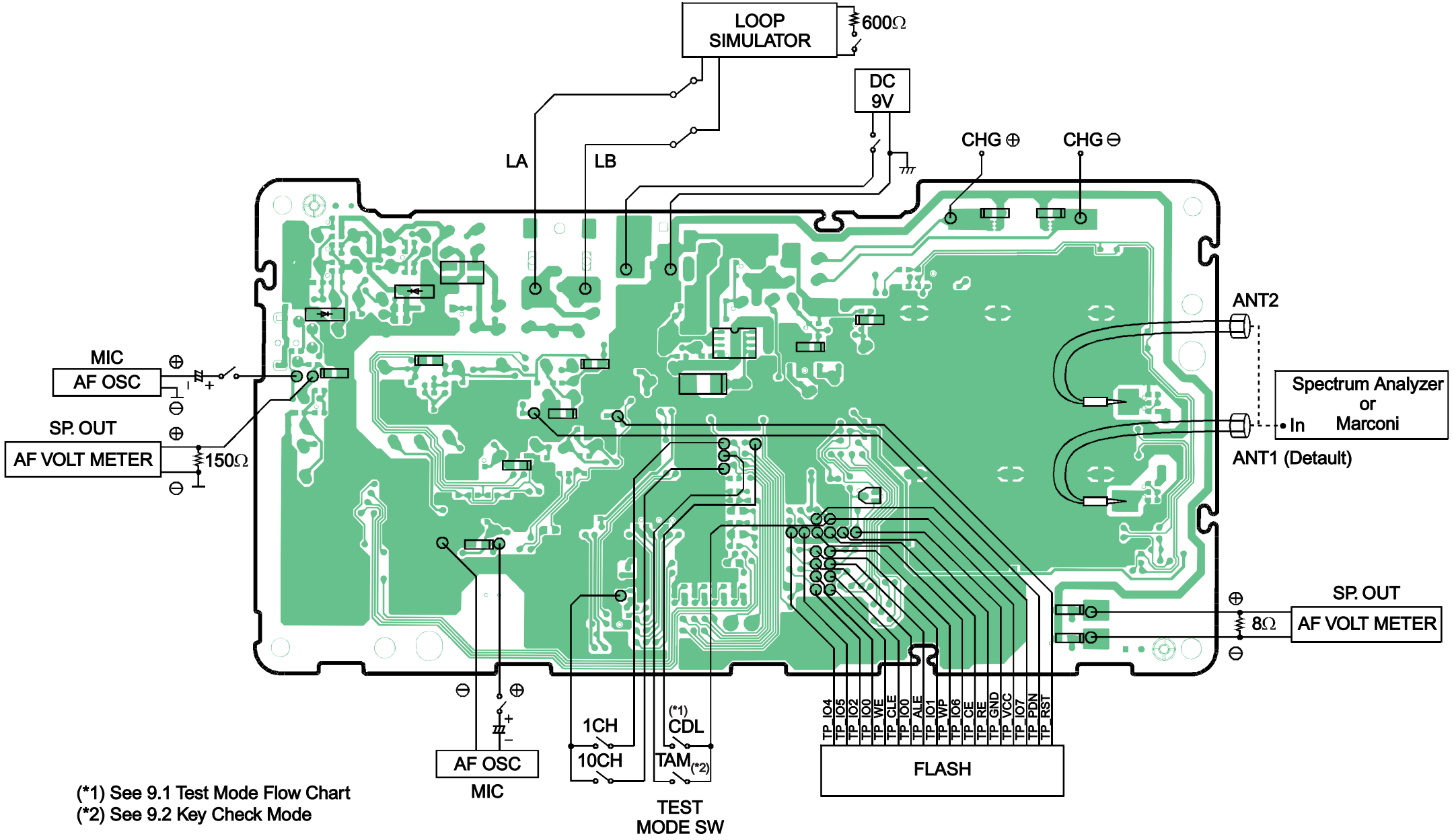
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

26. SCHEMATIC DIAGRAM (RF Unit)

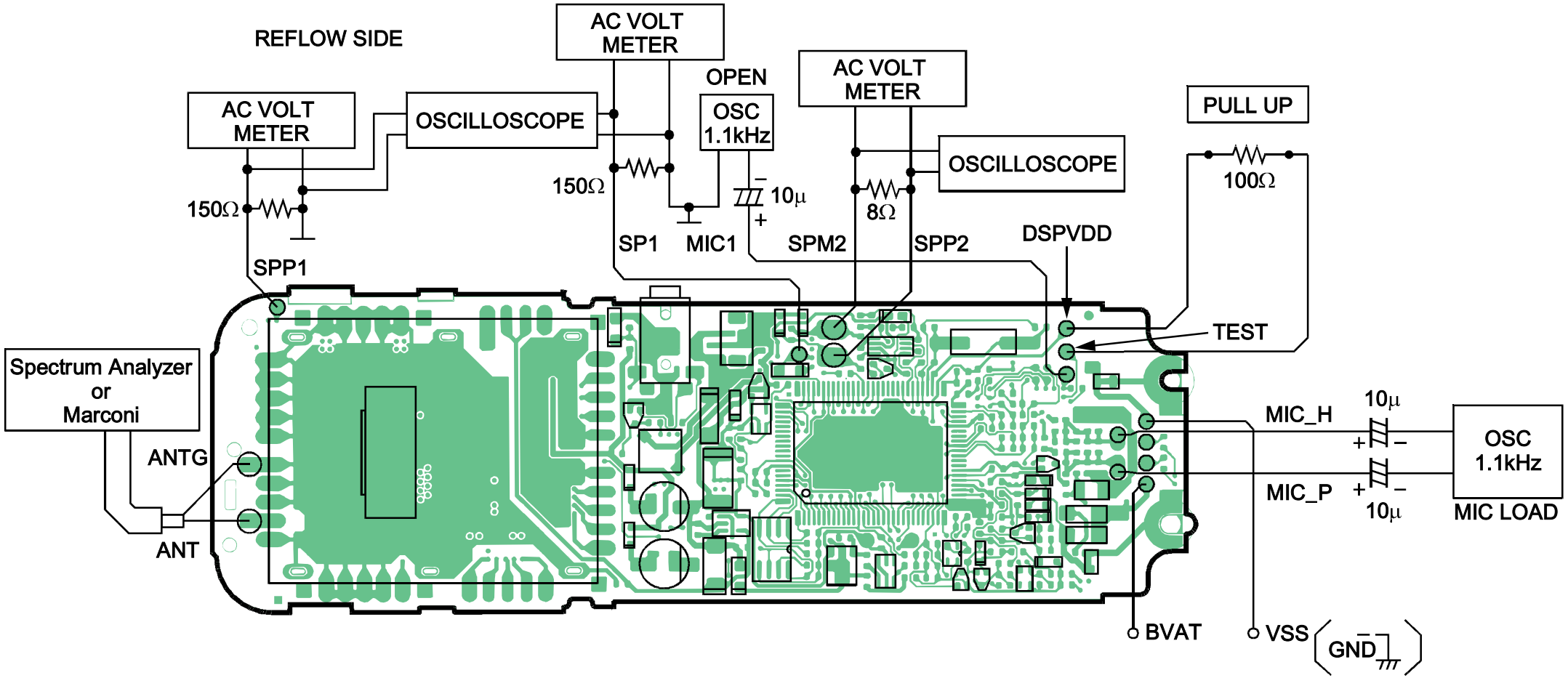
26.1. RF Unit Reference Drawing

26.2. Base Unit

26.3. Handset
27. OPERATION
27.1. Component View
27.2. Flow Solder Side View
28. SCHEMATIC DIAGRAM (Operation)
29. CIRCUIT BOARD (Base Unit)
29.1. Component View
29.2. Flow Solder Side View
30. SCHEMATIC DIAGRAM (Base Unit)
31. CIRCUIT BOARD (Handset)
31.1. Component View
31.2. Flow Solder Side View
32. SCHEMATIC DIAGRAM (Handset)
U / KXTG2680N / Printed in Japan



(*1) See 9.1 Test Mode Flow Chart
(*2) See 9.2 Key Check Mode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AC VOLT METER
PULL UP
AC VOLT METER
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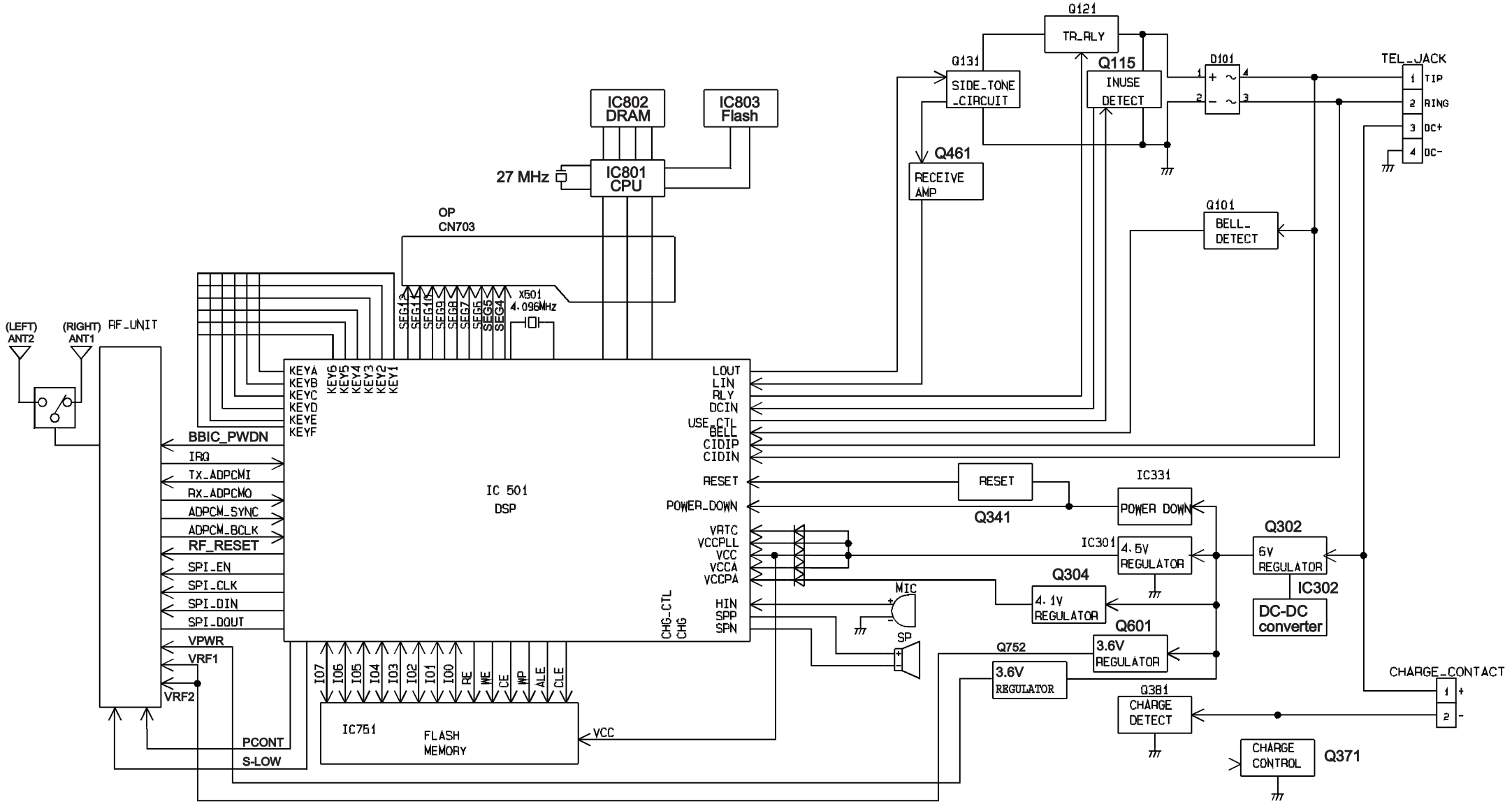
OSC 1.1kHz
OSCILLOSCOPE
150Ω
150Ω
10µ
8Ω
100Ω
SP1
MIC1
SPM2
SPP2
DSPVDD
SPP1
TEST
Spectrum Analyzer or Marconi
ANTG
ANT
MIC_H
MIC_P
10µ
10µ
OSC 1.1kHz
MIC LOAD
BVAT
VSS
GND


Q121
TR_RLY
Q131
SIDE_TONE
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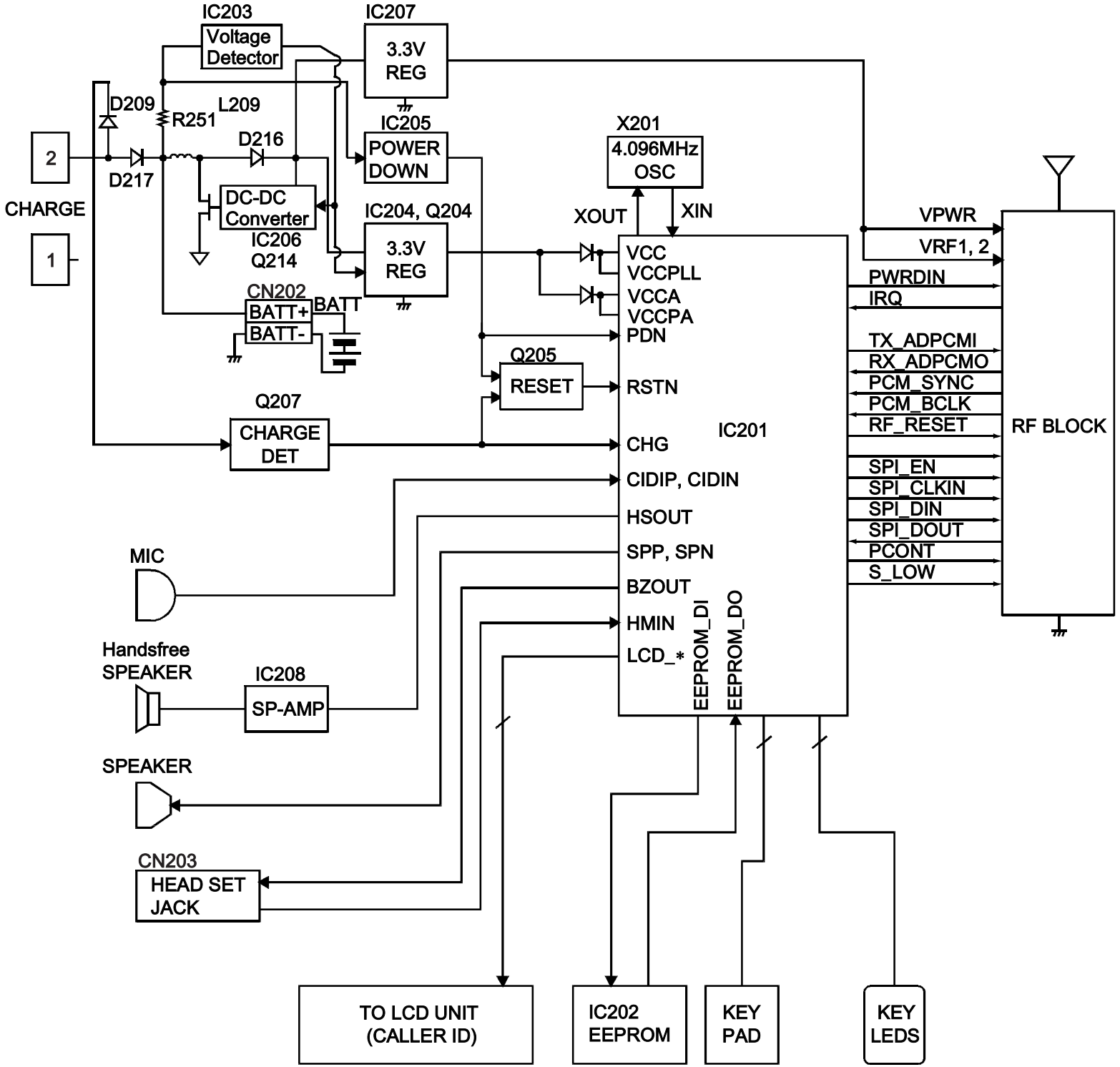
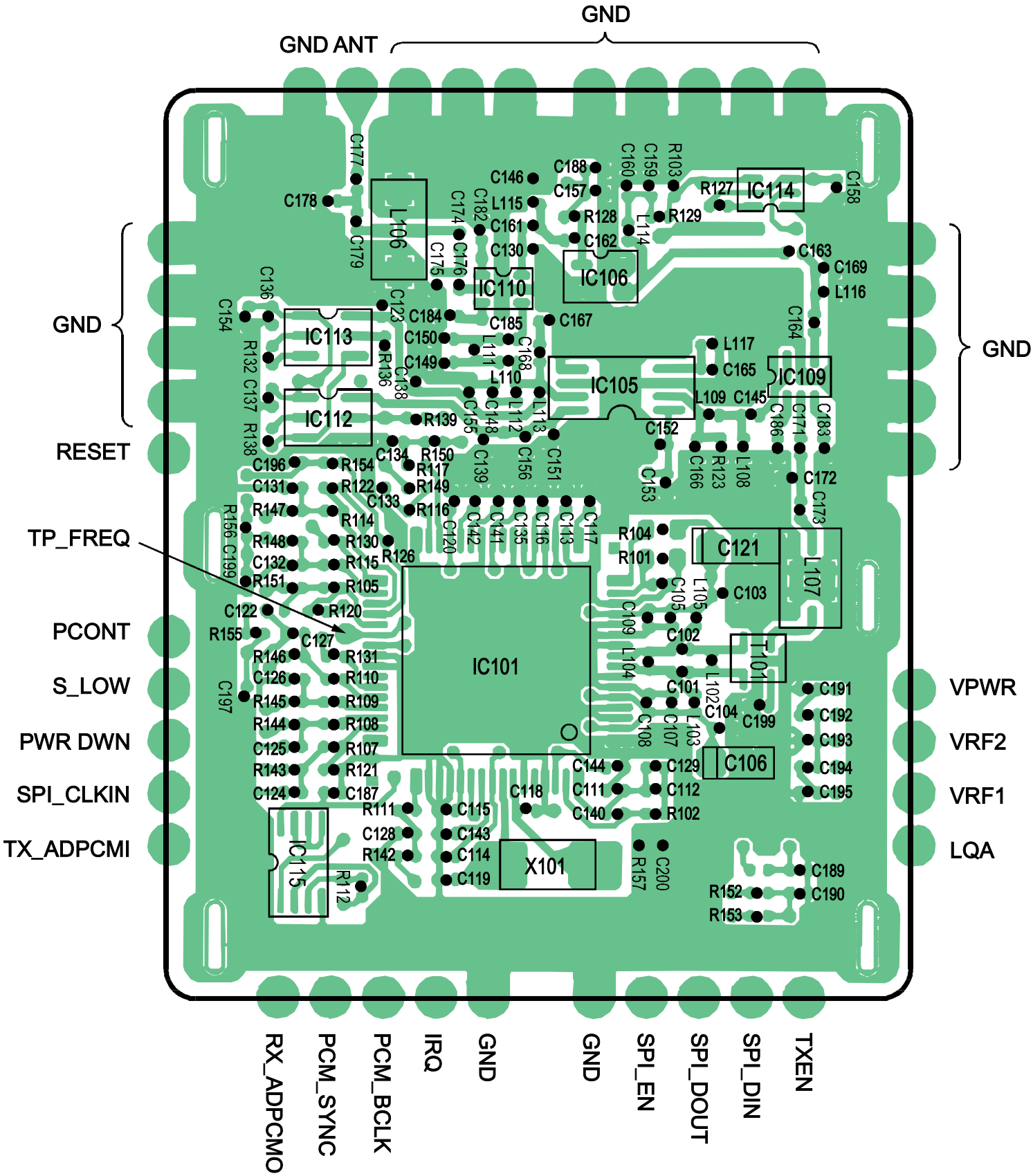
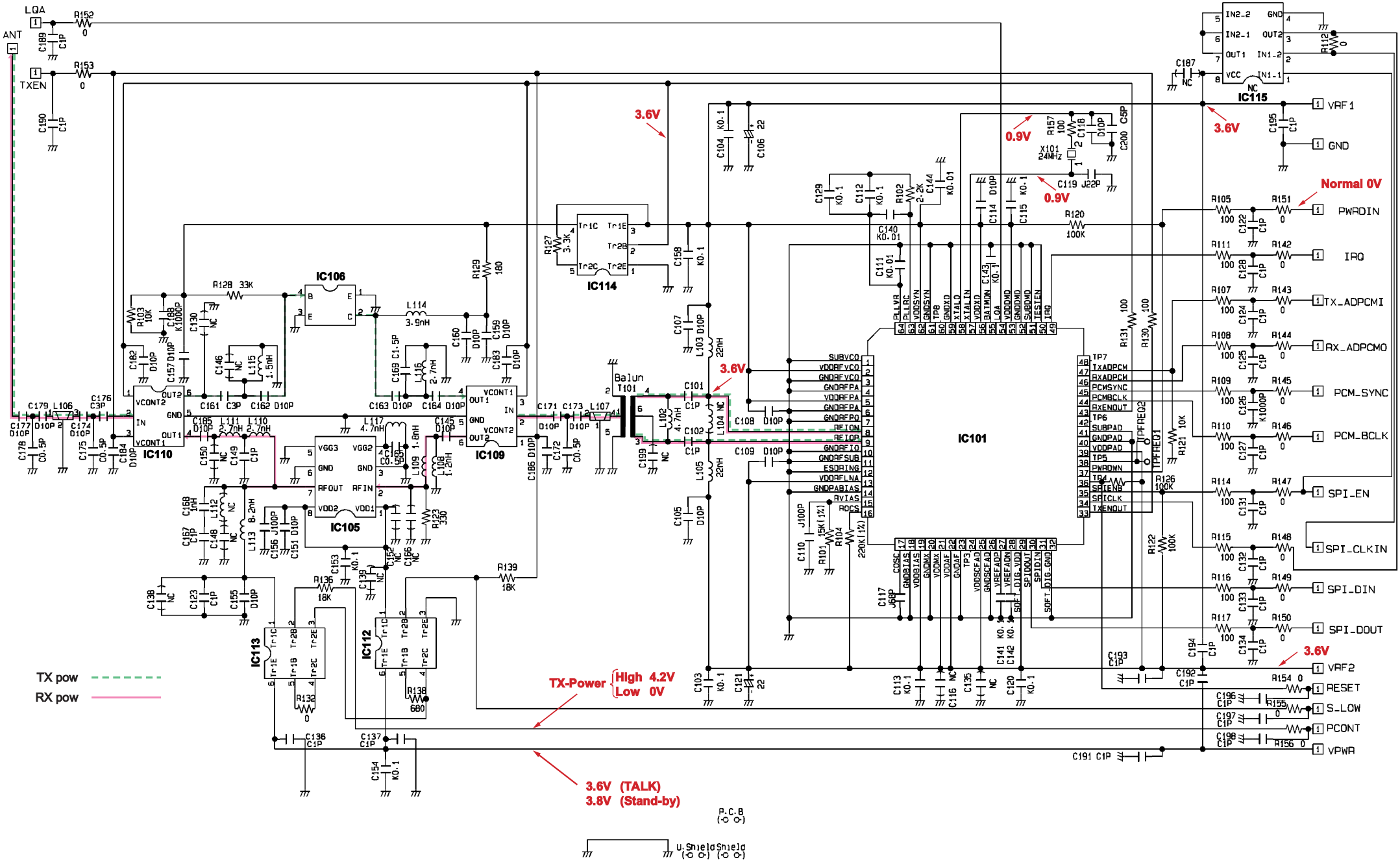
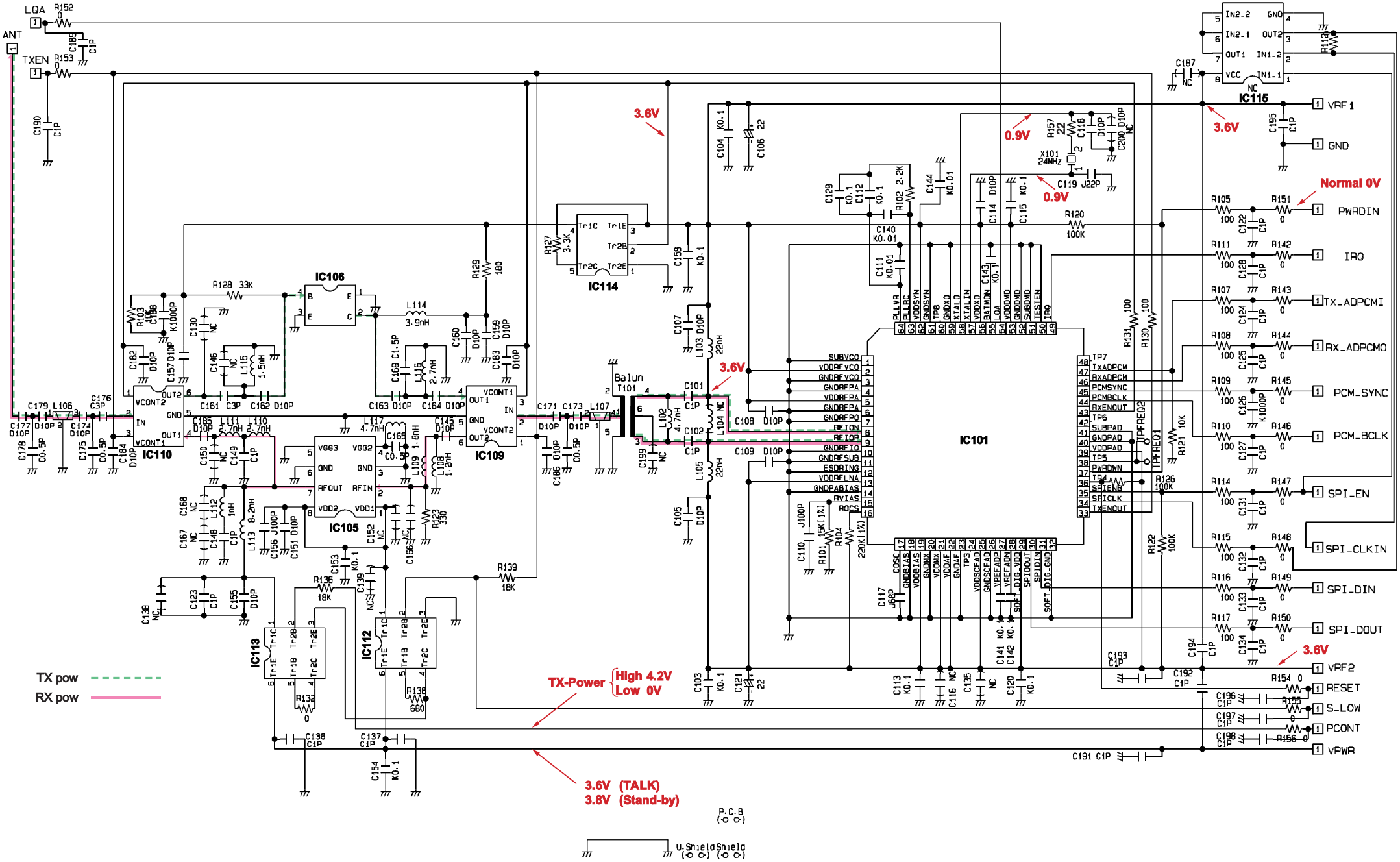
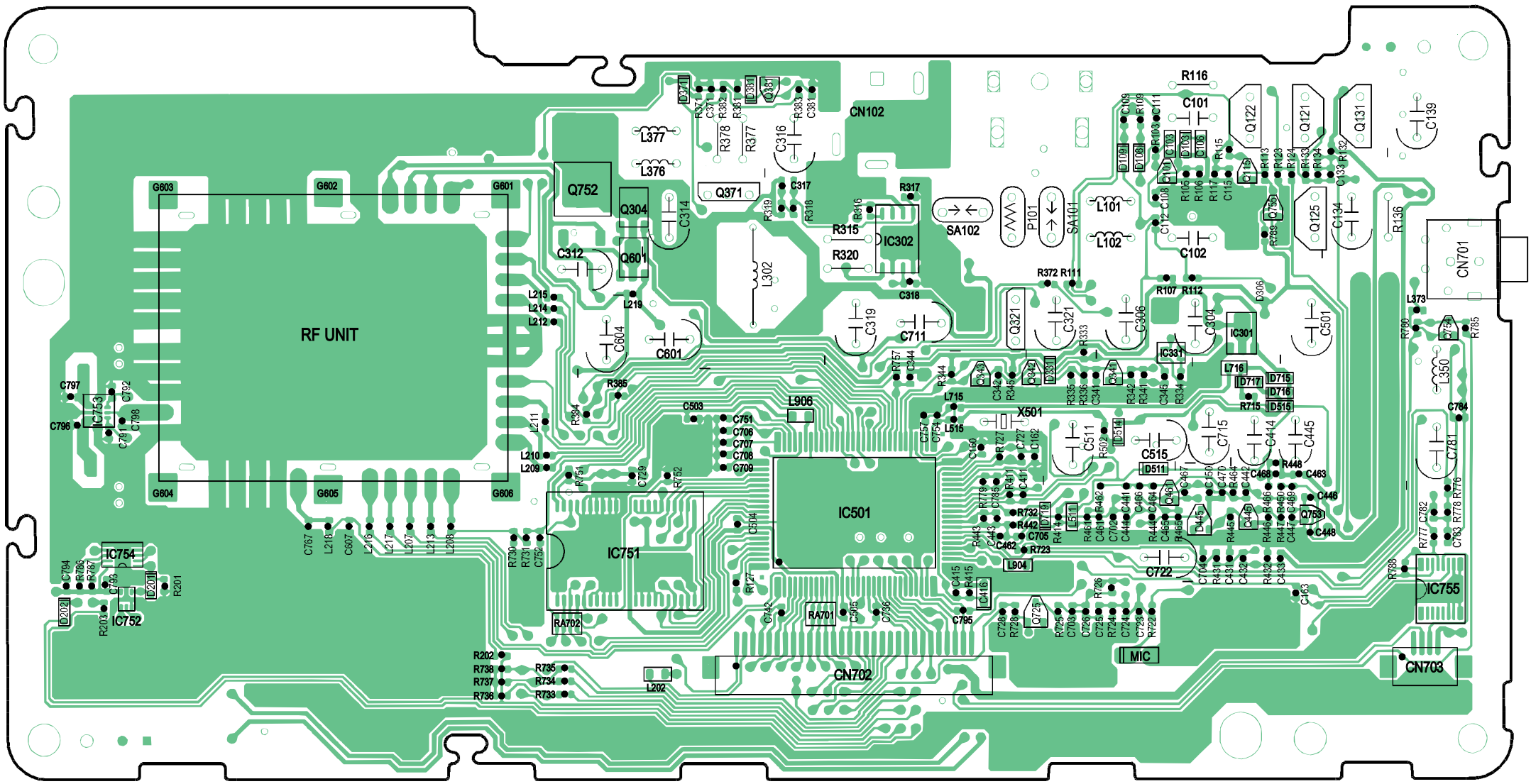
Q115
INUSE
DETECT
D101
TEL_JACK
1 TIP
2 RING
3 DC+
4 DC-
IC802
DRAM
IC803
Flash
27 MHz
IC801
CPU
Q461
RECEIVE
AMP
OP
CN703
Q101
BELL_
DETECT
X501
4.096MHz
(LEFT)
ANT2
(RIGHT)
ANT1
RF_UNIT
KEYA
KEYB
KEYC
KEYD
KEYE
KEYF
KEY6
KEY5
KEY4
KEY3
KEY2
KEY1
SEG13
SEG12
SEG10
SEG9
SEG8
SEG7
SEG6
SEG5
SEG4
LOUT
LIN
RLY
DCIN
USE_CTL
BELL
CIDIP
CIDIN
RESET
POWER_DOWN
VRTC
VCCPLL
VCC
VCCA
VCCPA
HIN
SPP
SPN
CHG-CTL
CHG
IC 501
DSP
BBIC_PWDN
IRQ
TX_ADPCMI
RX_ADPCMO
ADPCM_SYNC
ADPCM_BCLK
RF_RESET
SPI_EN
SPI_CLK
SPI_DIN
SPI_DOUT
VPWR
VRF1
VRF2
PCONT
S-LOW
IO7
IO6
IO5
IO4
IO3
IO2
IO1
IO0
RE
WE
CE
WP
ALE
CLE
IC751
FLASH
MEMORY
VCC
RESET
Q341
IC331
POWER DOWN
IC301
4.5V
REGULATOR
Q302
6V
REGULATOR
IC302
DC-DC
converter
Q304
4.1V
REGULATOR
MIC
SP
Q601
3.6V
REGULATOR
Q752
3.6V
REGULATOR
Q381
CHARGE
DETECT
CHARGE_CONTACT
1 +
2 -
CHARGE
CONTROL
Q371


IC203
Voltage Detector
IC207
3.3V REG
D209
R251
L209
IC205
POWER DOWN
X201
4.096MHz OSC
2
D216
D217
CHARGE
1
DC-DC Converter
IC206
Q214
IC204, Q204
3.3V REG
XOUT
XIN
VPWR
VRF1, 2
CN202
BATT+
BATT-
BATT
VCC
VCCPLL
VCCA
VCCPA
PWRDIN
IRQ
PDN
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
RF_RESET
Q205
RESET
RSTN
Q207
CHARGE DET
IC201
RF BLOCK
CHG
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
PCONT
S_LOW
CIDIP, CIDIN
HSOUT
MIC
SPP, SPN
BZOUT
HMIN
LCD_*
EEPROM_DI
EEPROM_DO
Handsfree SPEAKER
IC208
SP-AMP
SPEAKER
CN203
HEAD SET JACK
TO LCD UNIT (CALLER ID)
IC202 EEPROM
KEY PAD
KEY LEDS


GND
GND ANT
GND
RESET
TP_FREQ
PCONT
S_LOW
PWR DWN
SPI_CLKIN
TX_ADPCMI
GND
VPWR
VRF2
VRF1
LQA
RX_ADPCMO
PCM_SYNC
PCM_BCLK
IRQ
GND
GND
SPI_EN
SPI_DOUT
SPI_DIN
TXEN
IC101
IC105
IC106
IC109
IC110
IC112
IC113
IC114
IC115
C121
C106
L107
T101
X101


ANT
LQA
TXEN
IC101
IC105
IC106
IC109
IC110
IC112
IC113
IC114
IC115
3.6V
0.9V
Normal 0V
Balun T101
X101 24MHz
VRF1
GND
PWRDIN
IRQ
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
VRF2
RESET
S_LOW
PCONT
VPWR
TX pow
RX pow
TX-Power
High 4.2V
Low 0V
3.6V (TALK)
3.8V (Stand-by)
P.C.B
U.Shield
Shield


ANT
LQA
TXEN
IC101
IC105
IC106
IC109
IC110
IC112
IC113
IC114
IC115
Balun T101
X101 24MHz
3.6V
0.9V
Normal 0V
TX-Power
High 4.2V
Low 0V
3.6V (TALK)
3.8V (Stand-by)
TX pow
RX pow
P.C.B
U.Shield
Shield
PWRDIN
IRQ
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
VRF1
VRF2
GND
RESET
S_LOW
PCONT
VPWR


RF UNIT
G603
G602
G601
G604
G605
G606
Q752
Q304
Q601
Q371
L377
L376
L302
C312
C314
C316
C317
C318
C319
C711
C601
C604
R315
R320
IC302
SA102
P101
SA101
L101
L102
C101
C102
R116
Q122
Q121
Q131
Q125
Q134
C139
R136
CN701
L373
L350
C784
C781
IC301
IC331
C501
C304
C306
Q321
C321
D306
L906
X501
C503
C504
IC501
IC751
C722
L904
C515
D511
C511
C715
C414
C445
C753
C754
C757
L715
L515
L716
D717
D715
D716
D515
R715
C751
C706
C707
C708
C709
C767
C607
C729
C728
C752
RA702
RA701
C742
C595
C736
C795
C728
C726
C725
C724
C723
C722
Q725
Q726
MIC
IC753
IC754
IC752
IC755
CN702
CN703
L202
R202
R738
R737
R736
R735
R734
R733
C797
C796
C792
C798
C791
C794
R786
R787
C793
D201
R201
D202
R203
C782
R777
R778
R776
C783
R788
C163
R448
C463
C446
C448
Q753
C468
C469
C470
C467
C150
C160
C162
C727
R727
R502
D514
L511
D718
R732
R442
C705
C462
R723
R719
C735
R441
C441
C443
R443
R461
R462
C461
C702
C444
C466
C464
C465
R444
R465
R445
R446
R447
R466
R460
R469
C432
C431
R431
C704
R432
C433
C415
R415
C416
R727
R726
C744
C745
R752
R731
R730
C767
L218
C607
L216
L217
L207
L213
L208
L215
L214
L212
L219
L211
L210
L209
R384
R385
R757
C344
R344
C343
C342
R345
C340
D331
R335
R336
C341
C340
R342
R341
C343
R334
R372
R111
R107
R112
D306
R333
R317
R319
R318
R316
C317
R383
C381
D381
R381
R382
C381
R378
R377
C316
C371
R371
C371
R372
C372
R373
C373
R374
C374
R375
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R376
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R377
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C382
R383
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R388
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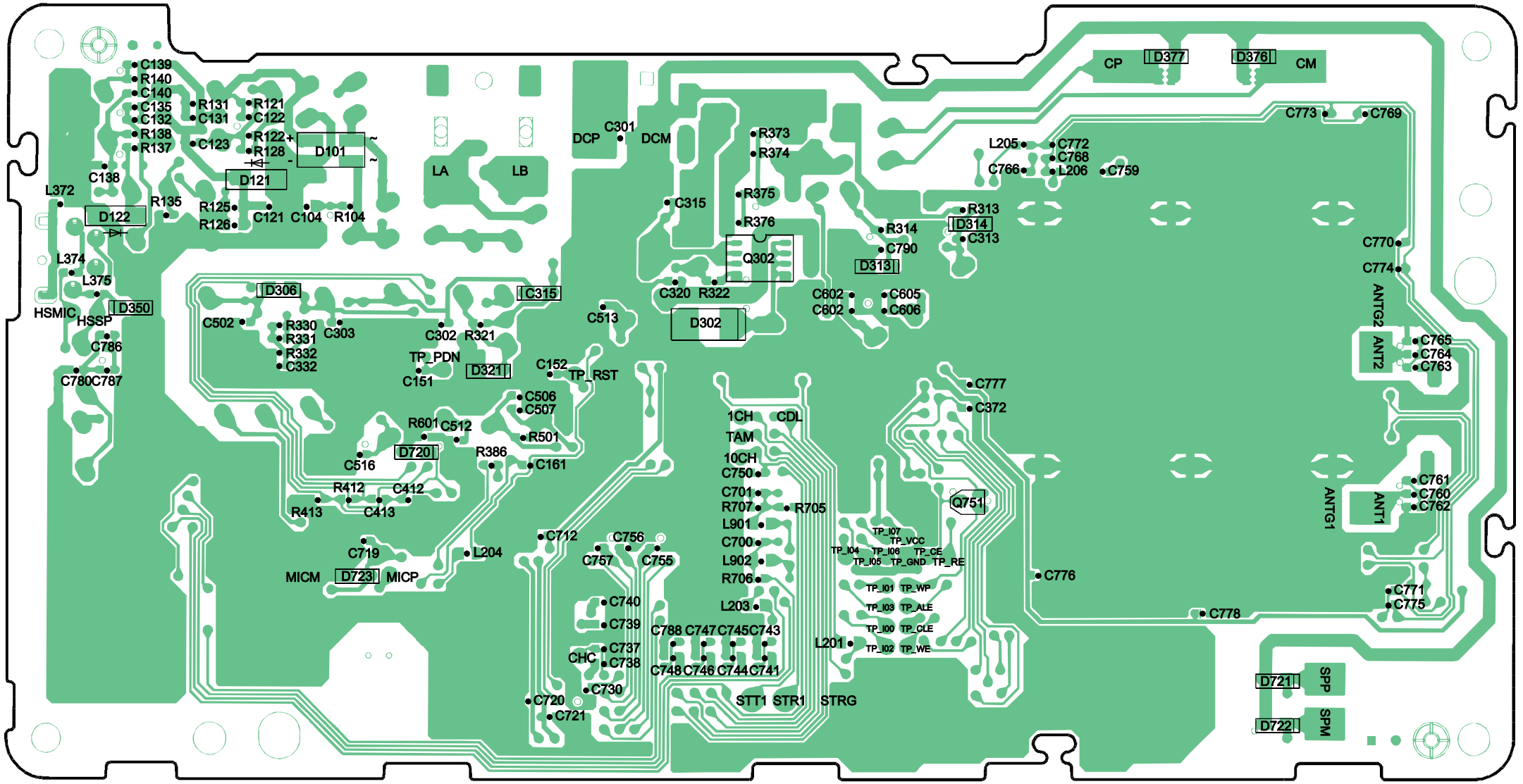
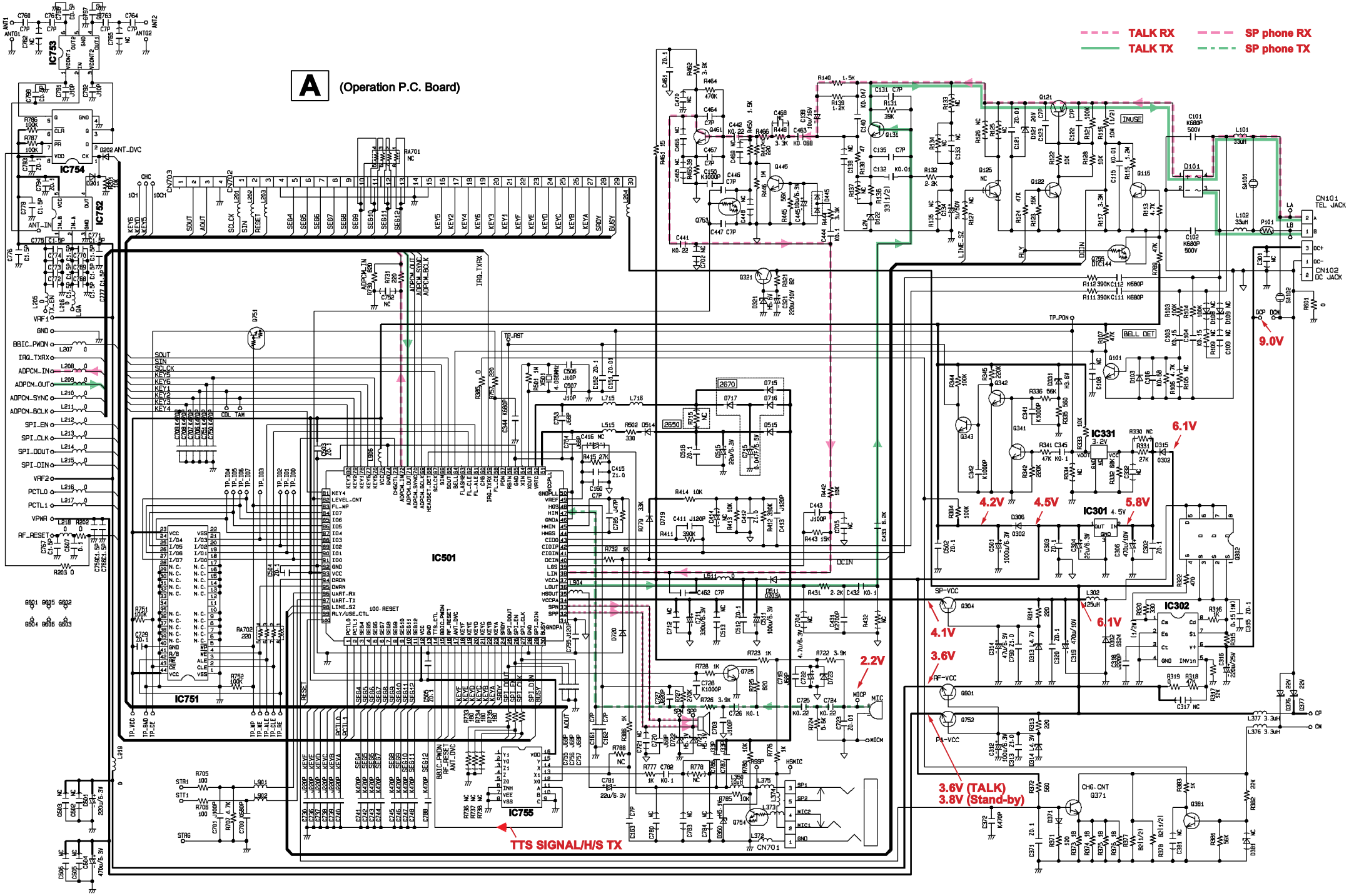
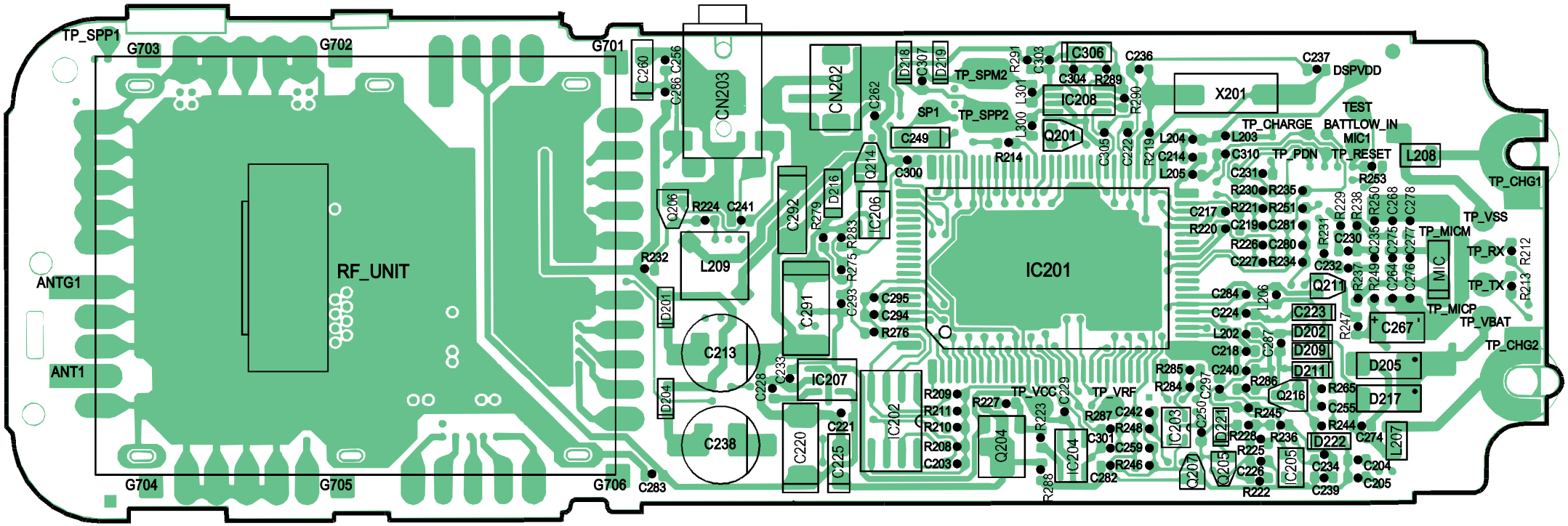
R389
C389
R390
C390


C139
R140
C140
C135
C132
R138
R137
R131
C131
R121
C122
R122
R128
C123
D101
D121
C138
L372
D122
R135
R125
R126
C121
C104
R104
L374
L375
HSMIC
D350
HSSP
C786
C780
C787
D306
C502
R330
R331
R332
C332
C303
C302
R321
TP_PDN
C151
D321
C315
C513
C152
TP_RST
C506
C507
R601
C512
C516
D720
R386
C161
R501
R412
C412
R413
C413
C719
L204
MICM
D723
MICP
C712
C756
C757
C755
C740
C739
C737
C738
C730
C720
C721
DCP
C301
DCM
LA
LB
C315
C320
R322
D302
R373
R374
R375
R376
Q302
R314
C790
D313
R313
D314
C313
C602
C602
C605
C606
1CH
CDL
TAM
10CH
C750
C701
R707
R705
L901
C700
L902
R706
L203
L201
C788
C747
C745
C743
C748
C746
C744
C741
STT1
STR1
STRG
TP_I07
TP_VCC
TP_I04
TP_I06
TP_CE
TP_I05
TP_GND
TP_RE
TP_I01
TP_WP
TP_I03
TP_ALE
TP_I00
TP_CLE
TP_I02
TP_WE
Q751
C777
C372
C776
C778
CP
D377
D376
CM
C773
C769
L205
C772
C768
C766
L206
C759
C770
C774
ANTG2
ANT2
C765
C764
C763
ANTG1
ANT1
C761
C760
C762
C771
C775
D721
SPP
D722
SPM


A
(Operation P.C. Board)
TALK RX
TALK TX
SP phone RX
SP phone TX
IC753
IC754
IC752
IC501
IC751
IC755
IC331
IC301
IC302
9.0V
6.1V
4.2V
4.5V
5.8V
4.1V
3.6V
2.2V
6.1V
3.6V (TALK)
3.8V (Stand-by)
TTS SIGNAL/H/S TX
CN101 TEL JACK
CN102 DC JACK
CN701


TP_SPP1
G703
G702
G701
RF_UNIT
ANTG1
ANT1
G704
G705
G706
C283
C260
C286
C256
CN203
CN202
C262
SP1
TP_SPM2
TP_SPP2
C249
C300
R214
D218
C307
D219
R291
C303
L301
L300
C306
C304
R289
C236
IC208
R290
Q201
C305
C222
R219
X201
C237
DSPVDD
TEST
TP_CHARGE
BATTLOW_IN
MIC1
L204
L203
C214
C310
TP_PDN
TP_RESET
L208
L205
C231
R253
TP_CHG1
R230
R235
C217
R221
R251
C220
C219
C281
R229
R238
R250
C268
C278
TP_VSS
TP_MICM
R231
C230
R226
C280
C275
C277
TP_RX
C227
R234
C232
R237
R249
C264
C276
MIC
R212
TP_TX
R213
C284
L206
Q211
C224
C223
TP_MICP
R247
C267
TP_VBAT
L202
D202
C218
C287
D209
TP_CHG2
C240
D211
D205
R285
R284
C297
R286
Q216
R265
D217
R245
C255
C250
R244
C274
R228
R236
D222
L207
R225
C234
C204
C226
C205
R222
C239
IC205
Q205
Q207
IC203
D221
C242
R248
C301
C259
R246
C282
IC204
R288
R223
C229
TP_VCC
TP_VRF
R287
R209
R211
R210
R208
C203
R227
Q204
C221
C225
IC202
C238
C213
C228
C233
IC207
C220
C291
C293
R275
R283
R279
C292
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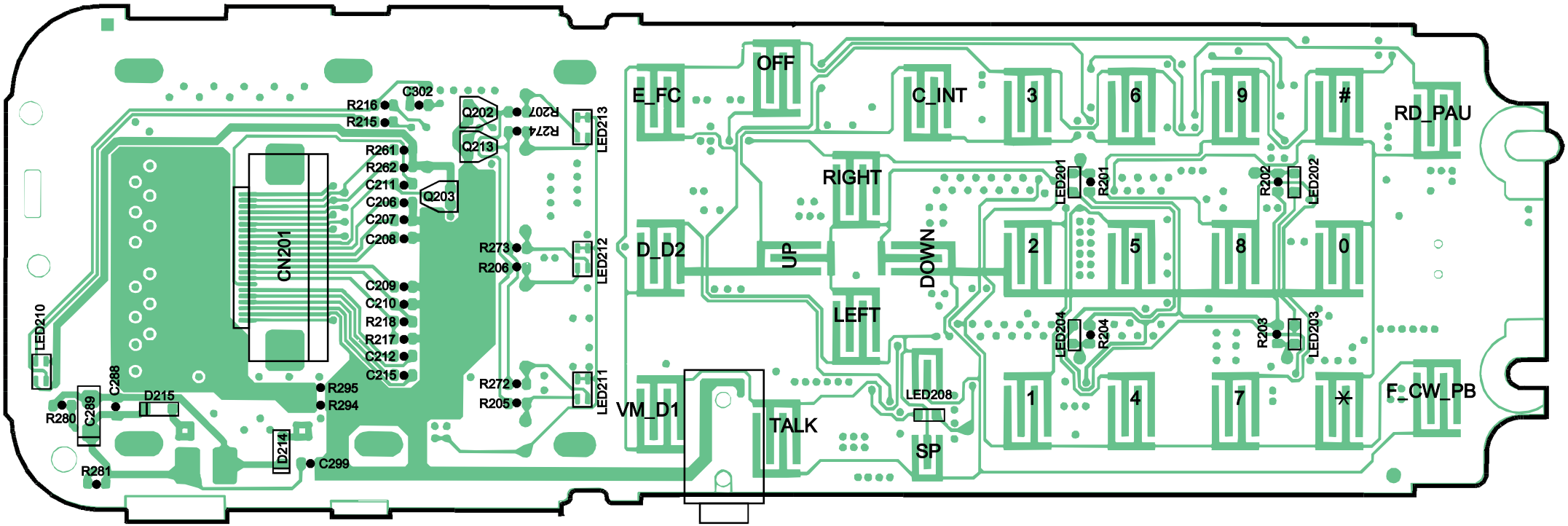
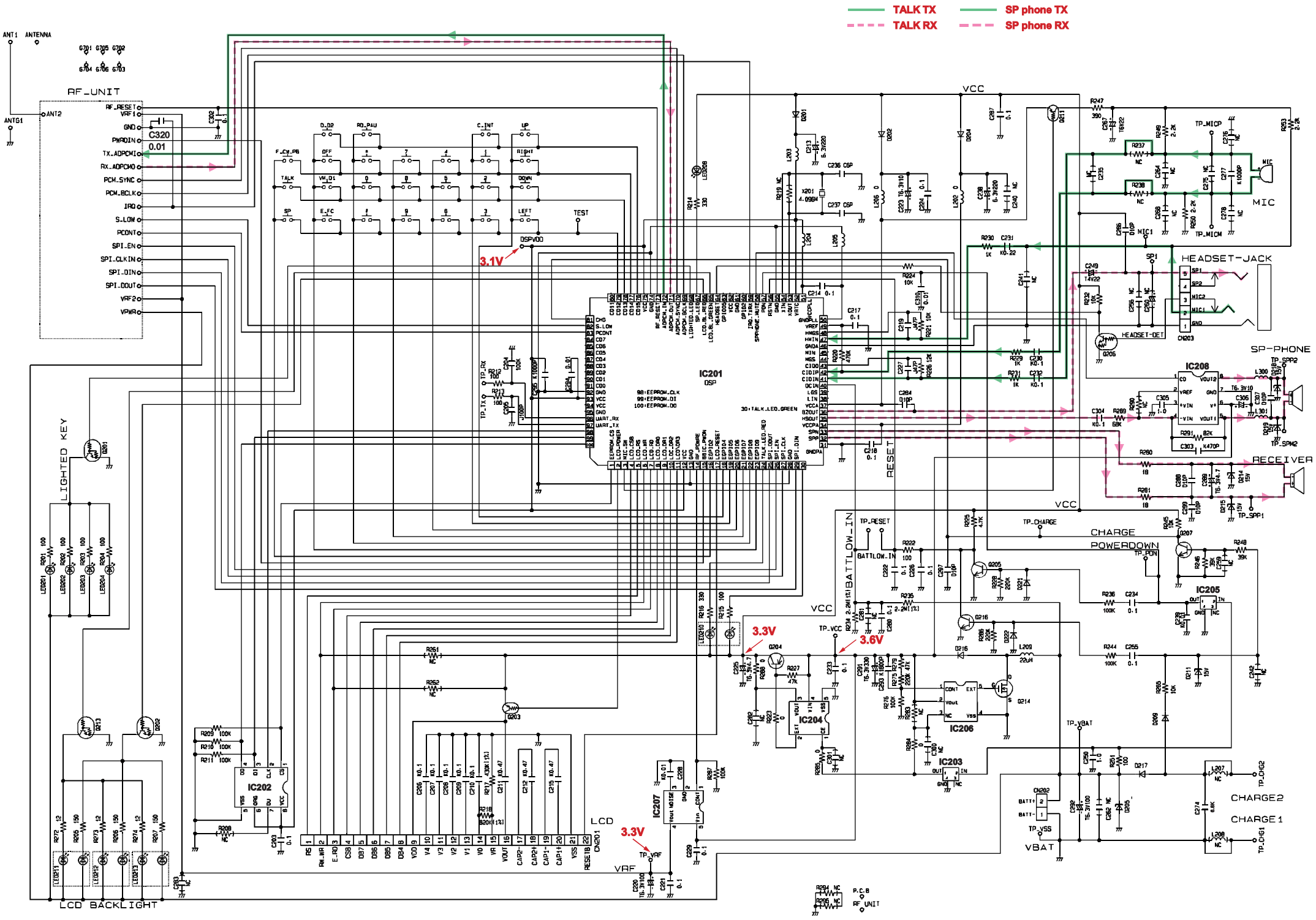
R232
L209
D201
D204
C295
C294
R276
IC201


OFF
E_FC
C_INT
3
6
9
#
RD_PAU
RIGHT
D_D2
UP
DOWN
2
5
8
0
LEFT
1
4
7
*
F_CW_PB
VM_D1
TALK
SP
LED208
CN201
R216
R215
C302
R261
R262
C211
C206
C207
C208
C209
C210
R218
R217
C212
C215
Q202
Q213
Q203
R207
R274
R273
R206
R272
R205
LED213
LED212
LED211
R295
R294
C299
LED210
C288
C289
D215
R280
R281
D214
LED201
R201
LED202
R202
LED204
R204
LED203
R203


TALK TX
TALK RX
SP phone TX
SP phone RX
ANT1
ANTENNA
ANTG1
ANT2
RF_UNIT
C320
0.01
RF_RESET
VRF1
GND
PWRDIN
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
IRQ
S_LOW
PCONT
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
VRF2
VPWR
IC201
DSP
98:EEPROM_CLK
99:EEPROM_DI
100:EEPROM_DO
30:TALK_LED_GREEN
3.1V
DSPVDD
TEST
VCC
3.3V
3.6V
TP_VCC
VRF
LCD
LCD BACKLIGHT
LIGHTED KEY
RESET
BATTLOW_IN
TP_RESET
TP_CHARGE
CHARGE
POWERDOWN
TP_PDN
TP_VBAT
VBAT
TP_VSS
HEADSET-JACK
HEADSET-DET
MIC
TP_MICP
TP_MICM
SP-PHONE
TP_SPM2
TP_SPP2
RECEIVER
TP_SPP1
CHARGE2
CHARGE1
TP_CHG2
TP_CHG1
IC202
IC203
IC204
IC205
IC206
IC207
IC208
P.C.B
RF_UNIT

Connection

(1) Take ANT1 coaxial cable off
(2) Solder coaxial cable (E+B) to ANT1 pads.
(3) Connect the other side of coaxial cable (E+B) to CN4 of PQZZTG200RF2.
(4) Connect cable (A+BNC) between RF input of Marconi BNC connector and CN3 of PQZZTG200RF2.

Marconi setting

1. Press [Tx Test]
2. Press [SELECT] to select BNC connector
3. Press [FREQ] [6][5][1][.][5][MHz]
4. Press [dBm] to convert unit μW to dBm.

Measurement

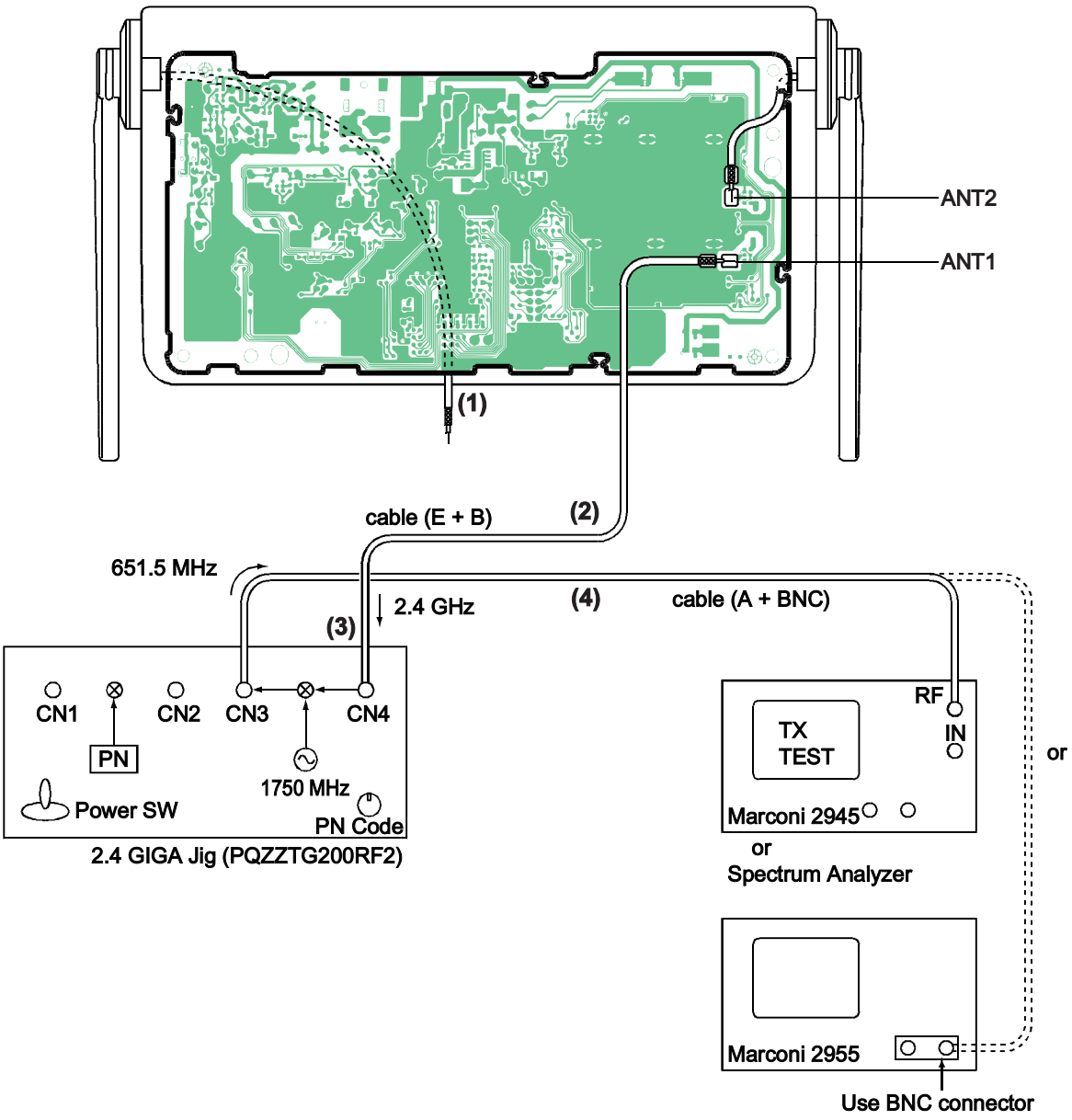
1. Press [1][9][*] simultaneously and plug in power.
2. Press [LOCATOR/INTERCOM] three times.
3. Measure TX power value by Marconi.
4. Check TX power value within specification.

LCD display
Tx Lo

To get correlated specification value

1. Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)
2. According loss value ,get specification value on **1.3.6. How to choose correct TX-Power specification table (Table 1~4).**

(ex.) If your JIG loss is 16dB and your test equipment is Marconi 2955B,
6.0 ~190.5μW is specification value for TX-low power



Connection
(1)~(4) Same as TX_Power Low

(5) Insert 20dB ATT between CN4 of PQZZTG200RF2 and coaxical calbe (E+B).

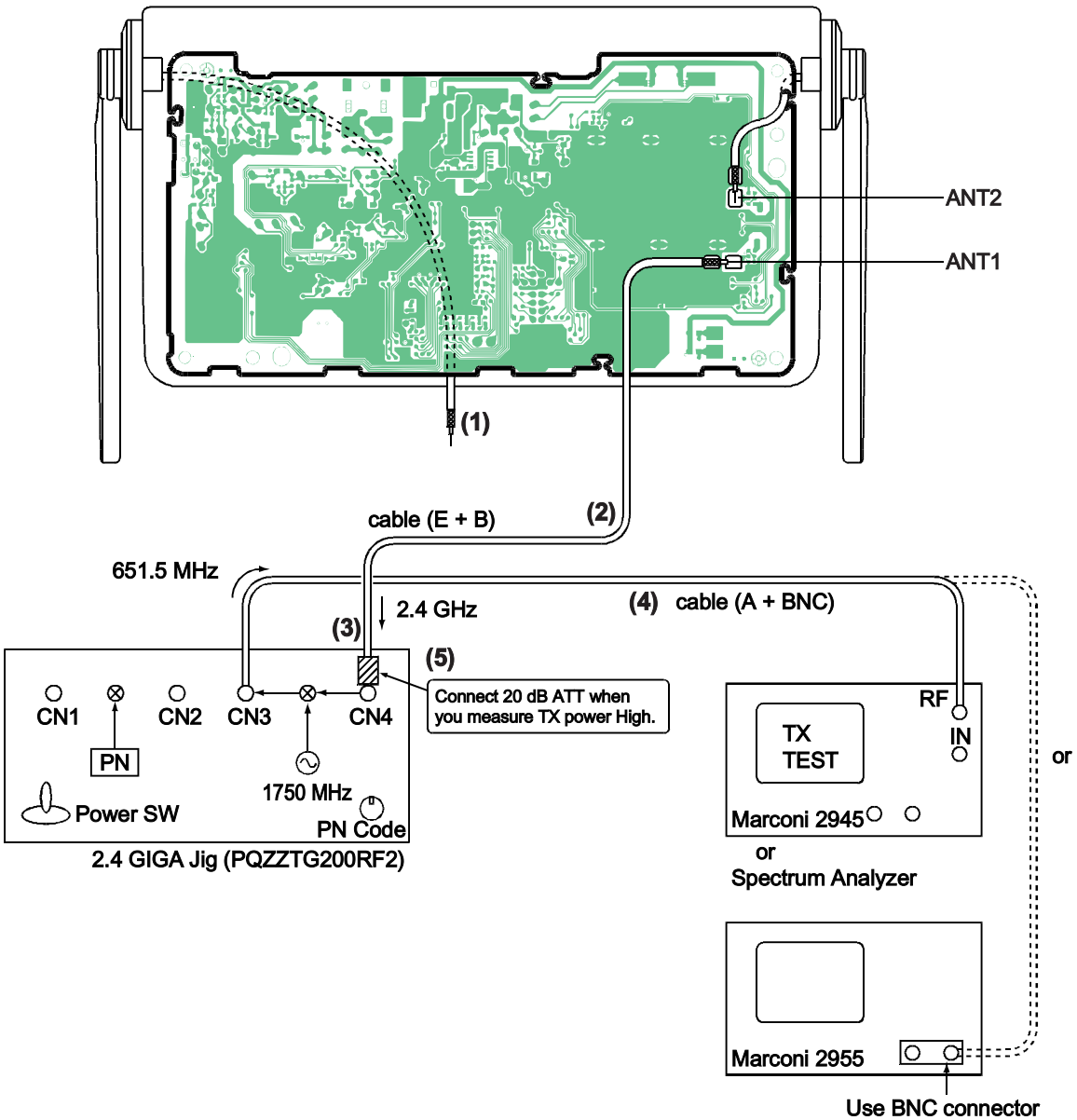
Marconi setting
Same as TX_Power Low

Measurement	LCD display
1~4. Same as TX_Power Low	
5. Press LOCATOR/INTERCOM	Tx Hi
6. Check TX power value within specification.	

To get correlated specification value
1. Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)
2. According loss value ,get specification value on **1.3.6. How to choose correct TX-Power specification table (Table 1~4).**

(ex.) If your JIG loss is 16dB and your test equipment is Marconi 2955B,
7.6~47.9μW is specification value for TX-high power.

(note: TX-high power value is attenuated by 20dB ATT.)



Connection
(1)~(5) Same as TX_Power High
(6) Take coaxial cable (E+B) off and solder this cable (E+B) to ANT2. Solder ANT1 cable to ANT1 pads.

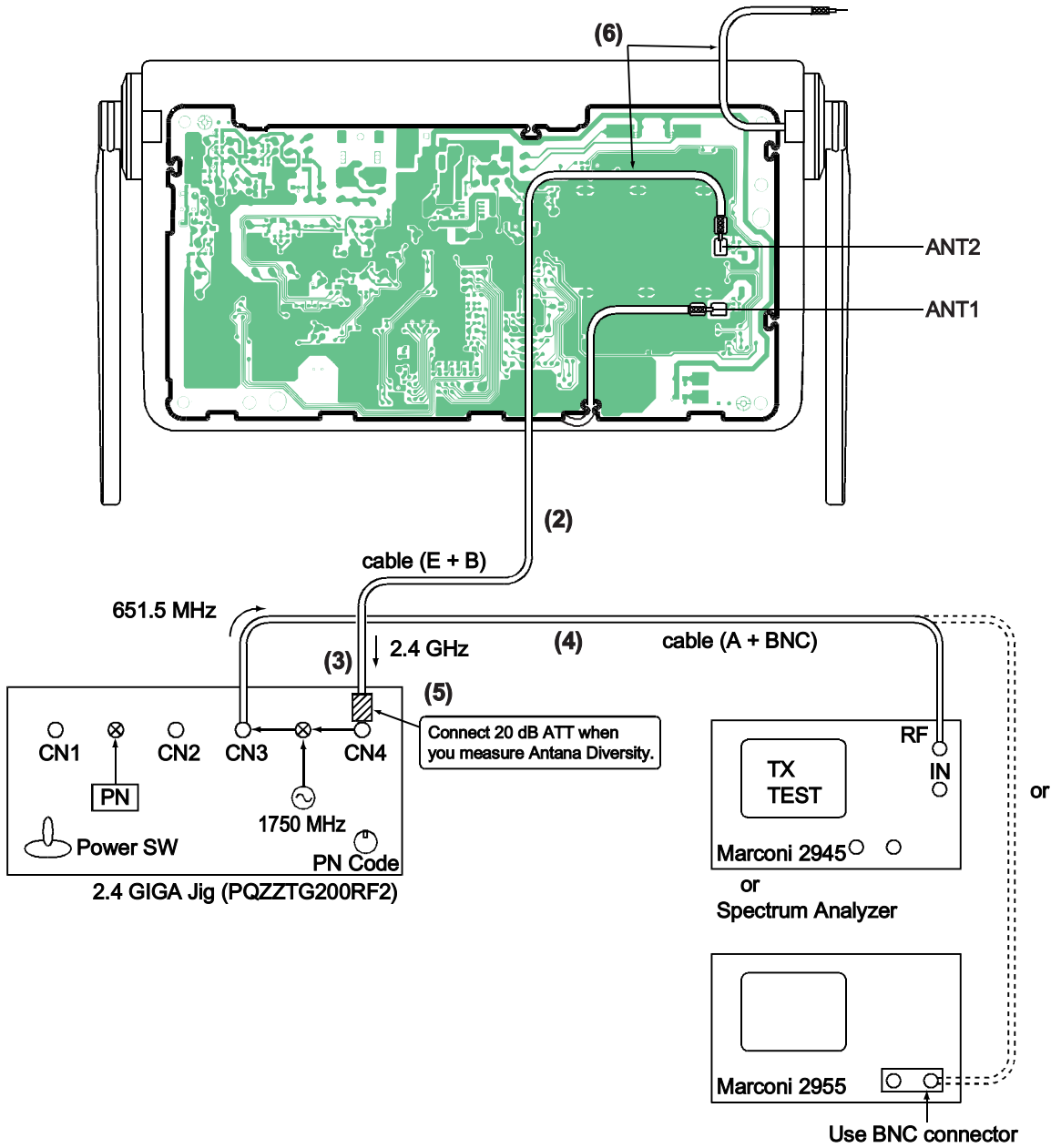
Marconi setting
Same as TX_Power Low

Measurement	LCD display
1~6. Same as TX_Power Low	
7. Press [LOCATOR/INTERCOM]	Standby
8. Press [1]	
9. Press [LOCATOR/INTERCOM] twice.	Tx Hi
10. Check TX power within TX-power high specification.	

To get correlated specification value
1. Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)
2. According loss value, get specification value on **1.3.6. How to choose correct TX-Power specification table (Table 1~4).**

(ex.) If your JIG loss is 16dB and your test equipment is Marconi 2955B,
7.6~47.9μW is specification value for TX-high power.

(note: TX-high power value is attenuated by 20dB ATT.)



Connection

(1) Take Internal antenna on HS off
(2) Solder coaxial cable (E+B) to ANT pads.
(3) Connect the other side of coaxial cable (E+B) to CN4 of PQZZTG200RF2.
(4) Connect cable (A+BNC) between RF input of Marconi BNC connector and CN3 of PQZZTG200RF2.

Marconi setting

1. Press [Tx Test]
2. Press [SELECT] to select BNC connector
3. Press [FREQ] [6][5][1][.][5][MHz]
4. Press [dBm] to convert unit μW to dBm.

Measurement

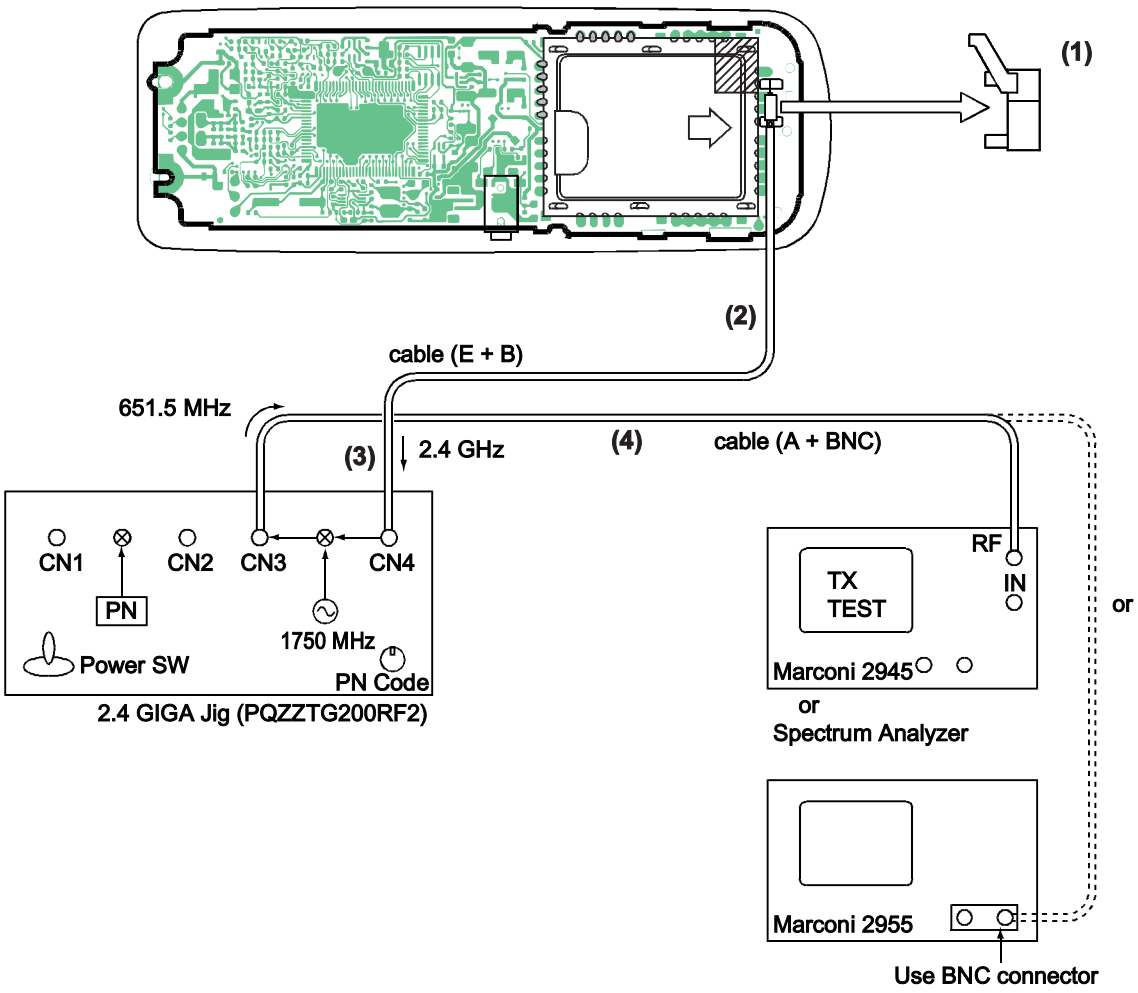
1. Press [1][9][✳] and plug in battery.
2. Press (TALK) twice, [OFF], and (TALK) once.
3. Measure TX power value by Marconi.
4. Check TX power value within specification.

LCD display
Tx Lo

To get correlated specification value
1. Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)
2. According loss value, get specification value on **1.3.6. How to choose correct TX-Power specification table (Table 1~4).**

(ex.) If your JIG loss is 16dB and your test equipment is Marconi 2955B,
6.0~190.5μW is specification value for TX-low power

(note: TX-high power value is attenuated by 20dB ATT.)



Connection
(1)~(4). Same as TX_Power Low
(5). Insert 20dB ATT between CN4 of PQZZTG200RF2 and coaxical calbe (E+B).

Marconi setting
Same as TX_Power Low

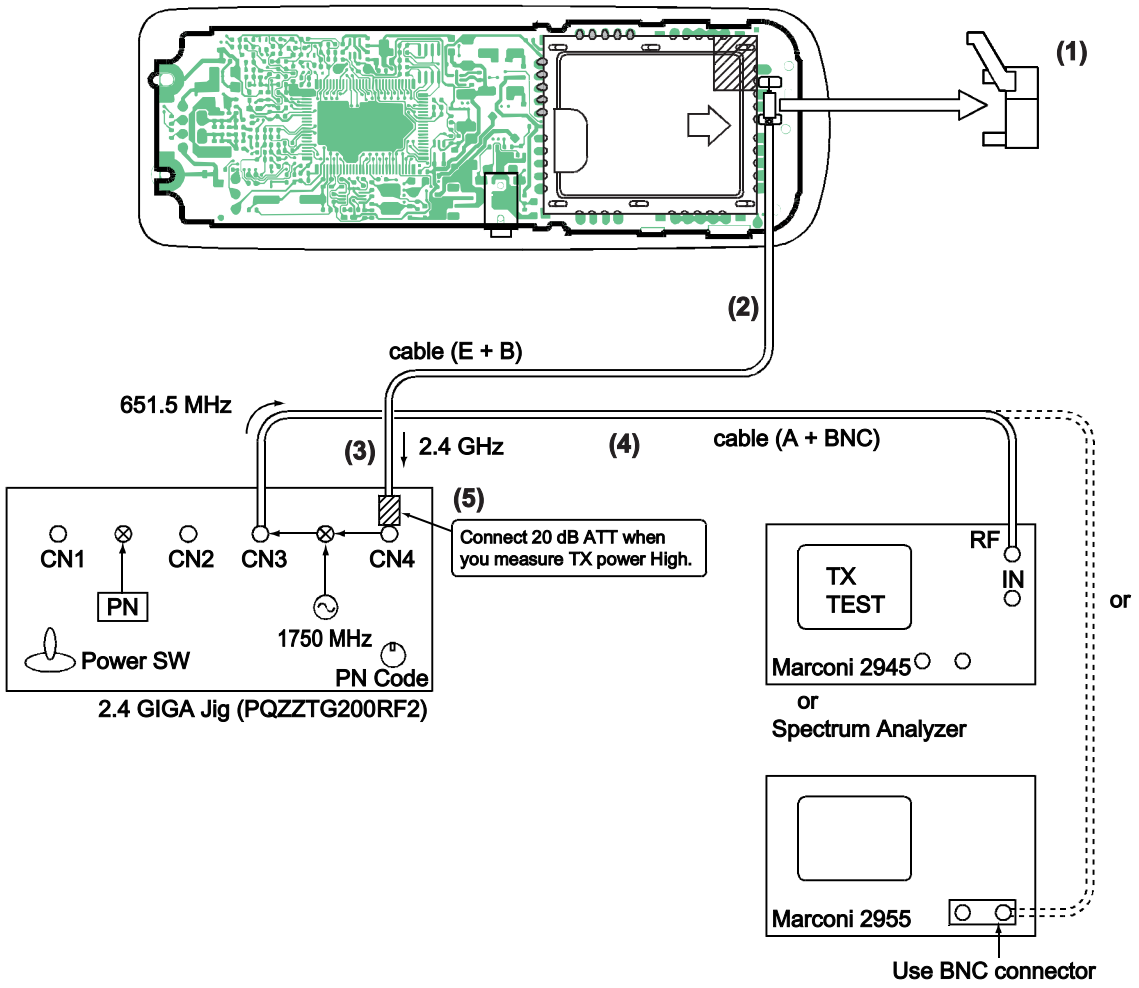
Marconi setting	LCD display
Same as TX_Power Low Measurement	
1~4. Same as TX_Power Low	Cw Tx High
5. Press (TALK)	
6. Check TX power value within specification.	

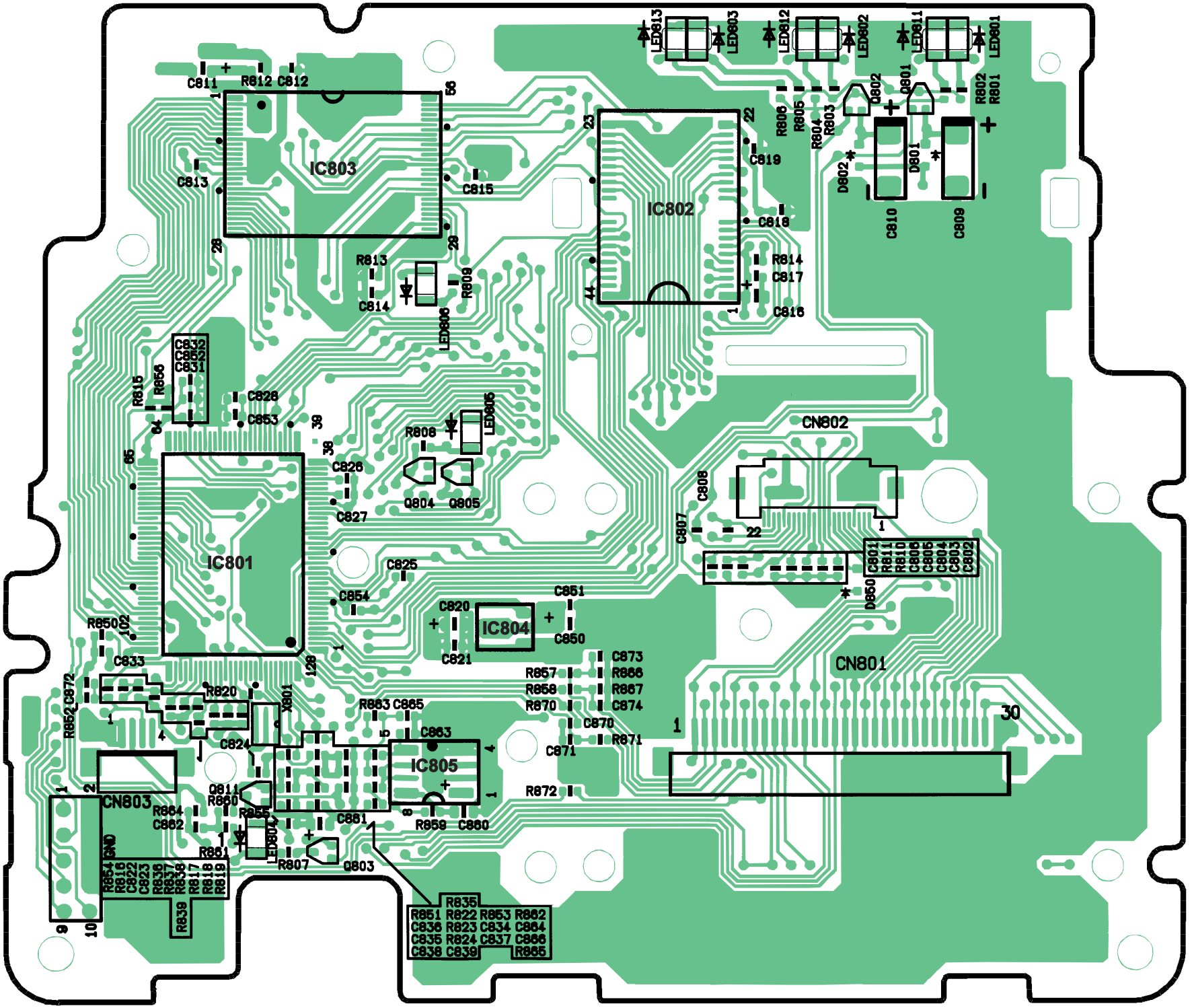
To get correlated specification value
1. Check loss value between CN3 and CN4 of your 2.4GHz GIGA JIG (PQZZTG200RF2)

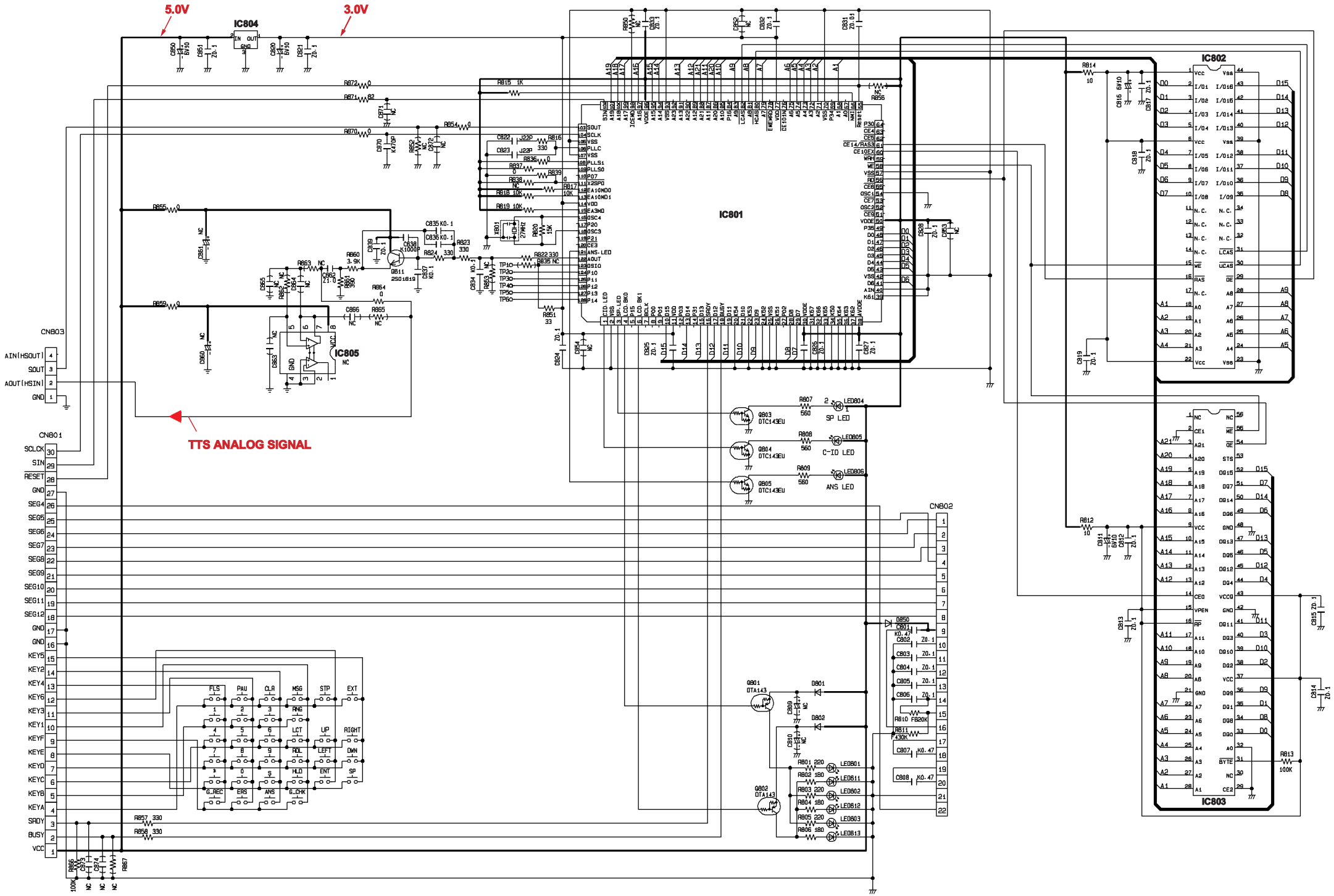
2. According loss value ,get specification value on **1.3.6. How to choose correct TX-Power specification table (Table 1~4).**

(ex.) If your JIG loss is 16dB and your test equipment is Marconi 2955B,
7.6~47.9μW is specification value for TX-high power.

(note: TX-high power value is attenuated by 20dB ATT.)




IC803
IC802
IC801
IC804
IC805
CN802
CN801
CN803
LED813
LED803
LED812
LED802
LED811
LED801
LED806
LED805
LED807
C811
R812
C812
C813
C815
C819
C818
R814
C817
C816
R813
C814
R809
R808
R805
R804
R803
R802
R801
D802
D801
C810
C809
C832
C853
C831
R815
R856
C828
C853
C826
C827
C825
C854
C820
C821
C851
C850
C808
C807
C801
R811
R810
C806
C805
C804
C803
C802
D850
R850
C833
C872
R852
R820
X801
C824
R863
C865
C863
C873
R866
R867
C874
R857
R858
R870
C870
R871
C871
R872
R864
C862
R861
R860
R855
C861
R859
C860
R854
R816
C822
C823
R836
R837
R838
R817
R818
R819
R839
GND
R835
R851
R822
R853
R862
C836
R823
C834
C864
C835
R824
C837
C866
C838
C839
R865


5.0V
3.0V
IC804
IC801
IC802
IC803
IC805
TTS ANALOG SIGNAL
CN803
AIN(HSOUT)
SOUT
AOUT(HSIN)
GND
CN801
SCLCK
SIN
RESET
CN802
SP LED
C-ID LED
ANS LED
FLS
PAU
CLR
MSG
STP
EXT
RNG
LCT
UP
RIGHT
RDL
LEFT
DWN
HLD
ENT
SP
G_REC
ERS
ANS
G_CHK